

JOINT ARCHIVE FOR SEA LEVEL DATA REPORT: November 2011

By

Mr. Patrick C. Caldwell

National Coastal Data Development Center,

National Oceanographic Data Center,

World Data Center-Silver Spring, Oceanography,

National Environmental Satellite Data and Information Service,

National Oceanic and Atmospheric Administration

Manager, Joint Archive for Sea Level

and

Dr. Mark A. Merrifield

School of Ocean and Earth Science

and Technology,

University of Hawaii,

Joint Institute for Marine and

Atmospheric Research, and

University of Hawaii Sea Level Center

JIMAR CONTRIBUTION NO. 11-377
DATA REPORT NO. 22

Abstract

The Joint Archive for Sea Level (JASL) is a collaboration between the University of Hawaii Sea Level Center (UHSLC) and the World Data Center-Silver Spring (WDC-SS) for Oceanography, which is co-located at the US National Oceanographic Data Center. The JASL is based at the UHSLC and grew out of the need for data management support of the Tropical Ocean Global Atmosphere (TOGA) Sea Level Center, founded by Dr. Klaus Wyrtki in 1985 at the University of Hawaii. The primary objective of the JASL is to prepare a scientifically valid, well-documented archive of hourly, daily, and monthly sea level values in standardized formats that are readily available to the international research communities. The JASL is a Global Sea Level Observing System (GLOSS) archive center. The successful growth of the JASL has been made possible through the generous contributions of over 100 agencies representing over 90 countries. On an annual basis, copies of the cumulative data holdings are submitted to the WDC-SS, the Permanent Service for Mean Sea Level, and the Climate Variability 'Delayed-Mode' Data Assembly Center for sea level. This data report was prepared to describe the present archive as of November 2011 and to highlight new and updated series.

Contents

	Page
1 HISTORY	1
2 DATA HOLDINGS November 2011	3
3 DATA REQUESTS	13
3.1 Anonymous FTP	
3.2 World Wide Web	
3.3 Sea Level CDROM	
3.4 Direct Requests	
ACKNOWLEDGEMENTS	16
REFERENCES	16
APPENDICES	18
A STATION LISTS	18
A.1. 2011 Submission to the World Data Center	18
A.2. New Series	33
A.3. Updated Series	34
A.4. Series Extended Backwards	40
A.5. Series with 2009 Data	40
A.6. Replaced Years within Series	46
A.7. Series with 60-Year Minimum Length	47
A.8. GLOSS Inventory November 2011	48
B ORIGINATORS	56

1. HISTORY

Over the past few decades, the scientific community has become increasingly interested in the predictability of climate. Consequently, the World Climate Research Programme (WCRP) was created by the World Meteorological Organization (WMO) and the International Council of Scientific Unions (ICSU) with the objective to determine the extent of climate predictability and of man's influence on climate.

A key activity of the WCRP in the 1980s was the Tropical Ocean Global Atmosphere (TOGA) Project, which was organized with the joint support of the ICSU's Scientific Committee on Oceanic Research (SCOR) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO. A major component of the plan was to monitor the global atmosphere and the upper layers of the three tropical oceans during the ten-year period of 1985-1994. Existing meteorological and oceanographic observation systems were maintained and new networks were installed. These observations along with available historical data have provided a description of the ocean-climate system and its variability from sub-seasonal to inter-annual scales and have served as the basis for studies of oceanic and atmospheric dynamics and for model input and verification. A secondary goal was to encourage the continuation of an indefinite observational oceanic and atmospheric monitoring system.

An important parameter of the ocean monitoring system is sea level. The TOGA program required daily sea level values with an accuracy of 2 cm. Sea level measurements have been made throughout the world by various national agencies, local ports authorities, and research organizations, but a centralized archive of daily data did not exist. In order to concentrate the efforts of acquiring, processing, and archiving the sea level data, the TOGA Sea Level Center (TOGA SLC) was established in 1985 at the University of Hawaii (UH) under the direction of Dr. Klaus Wyrtki, who had been responsible for the North Pacific Experiment (NORPAX) network of sea level stations, most of which were installed in the mid-1970s.

The UH pursued the dual responsibilities of maintaining a large sea level network and serving as a scientific data center. In the late 1980s, the UH increased the number of sites in the Pacific and expanded into the Indian Ocean; thus, the UH Indo-Pacific Sea Level Network (IPSLN) was formed. Moreover, national and international agencies with sea level gauges in tropical and subtropical locations were solicited for contributions of hourly data, which allowed better quality control than is possible with only daily values.

The TOGA SLC was operated as part of the UH Sea Level Center (UHSLC), which also managed the IPSLN. The UHSLC has played an important role in the IOC's Global Sea Level Observing System (GLOSS) program, which was formed in the mid 1980s and strives to improve technology and data exchange among participating countries, and to build a high quality archive in support of science and education. In 1997, the UHSLC gained responsibility of the National Oceanographic and Atmospheric Administration (NOAA) National Ocean Service (NOS) overseas network, which includes sites in all oceans. Thus, the IPSLN was renamed the Global Sea Level Network (GSLN). The UHSLC served as a 'Fast Delivery' Data Acquisition Center (DAC) for the World Ocean Circulation Experiment from 1995-2002. The DAC provided preliminarily quality-controlled hourly, daily, and monthly data on a one- to two-month lag.

The UHSLC presently operates the Joint WMO/IOC Commission for Oceanography and Marine Meteorology (JCOMM) Sea Level Program in the Pacific and the GLOSS 'Fast-Delivery' Sea Level Center, co-operable with the Climate Variability (CLIVAR) Program DAC. Primary support for the UHSLC comes from NOAA's Office of Climate Observations. Funding was also provided by National Aeronautical and Space Agency under the JASON program for the development of In Situ Tide Gauge/Continuous GPS Stations for Monitoring the Temporal Drift of Satellite Altimeters. Additional funding is provided by the IOC and the Asian Disaster Preparedness Center for tsunami warning system upgrades. Starting in 2009, the UHSLC is hosting real-time access to data of the highest sampling frequency, primarily 1-minute intervals, for stations maintained by the UHSLC, in support of evaluating extreme events, monitoring of ocean dynamics, and verifying ocean models. The UHSLC is presently directed by Dr. Mark Merrifield, who took the helm from Dr. Gary Mitchum in February 1996. Dr. Mitchum directed the center after Dr. Wyrtki's retirement in 1992.

As the quantity of data collected by the TOGA SLC increased during the mid 1980s, assistance with data management was provided by the United States (US) National Oceanographic Data Center (NODC), co-located with the World Data Center-Silver Spring (WDC-SS) for Oceanography, with the establishment in 1987 of the Joint Archive for Sea Level (JASL) at the UH. The JASL supplements the UHSLC with acquisition, quality review, data documentation, and archival of sea level values from contributing agencies. The proximity of JASL staff to the sea level experts at UH ensures a research data set of the highest quality, while the NODC lends its skills in data management to aid in timely turnaround of concise, standardized, well-documented data to the scientific community. The JASL is the primary avenue of acquisition of validated data sets and annually requests data contributions from agencies around the globe. The JASL promotes the creation of high quality data sets by offering a sea level processing package (Caldwell, 1998) upon request and participating in technical workshops sponsored by the GLOSS (Caldwell and Kilonsky, 1992; UNESCO, 1993; UNESCO, 1995; UNESCO, 2003). Since October 2000, the JASL has been supported by the National Coastal Data Development Center, a division of NODC.

The first seven years of the TOGA SLC were dedicated to collection of data from the Pacific and Indian Oceans. Starting in 1990, efforts were expanded to acquiring data

for the tropical Atlantic Ocean. With the conclusion of the TOGA Program in 1995, the TOGA SLC was absorbed within the JASL's duties of maintaining a research quality data archive. Many of the observing stations implemented by the TOGA Program continue to operate and most of the collaborative agencies continue to provide sea level data on a regular basis. Over the past decade, the JASL has requested finalized, quality-controlled hourly data from agencies which maintain gauges at oceanographically important high latitude sites, such as those of the WOCE, CLIVAR, or GLOSS networks. Many of these sites have served as ground truth stations for the joint US/France TOPEX/POSEIDON altimetry program (Mitchum, 1994) and continue to serve on follow-up altimeter JASON mission. The JASL has also focused attention on data rescue by obtaining paper records, overseeing the digitization, and performing quality control (Caldwell, 2003).

This data report describes the present data holdings at the JASL and highlights new and updated series. Methods of acquisition, quality control, and assessment have been documented (Caldwell and Kilonsky, 1992; Kilonsky and Caldwell, 1991) and will not be elaborated upon in this text.

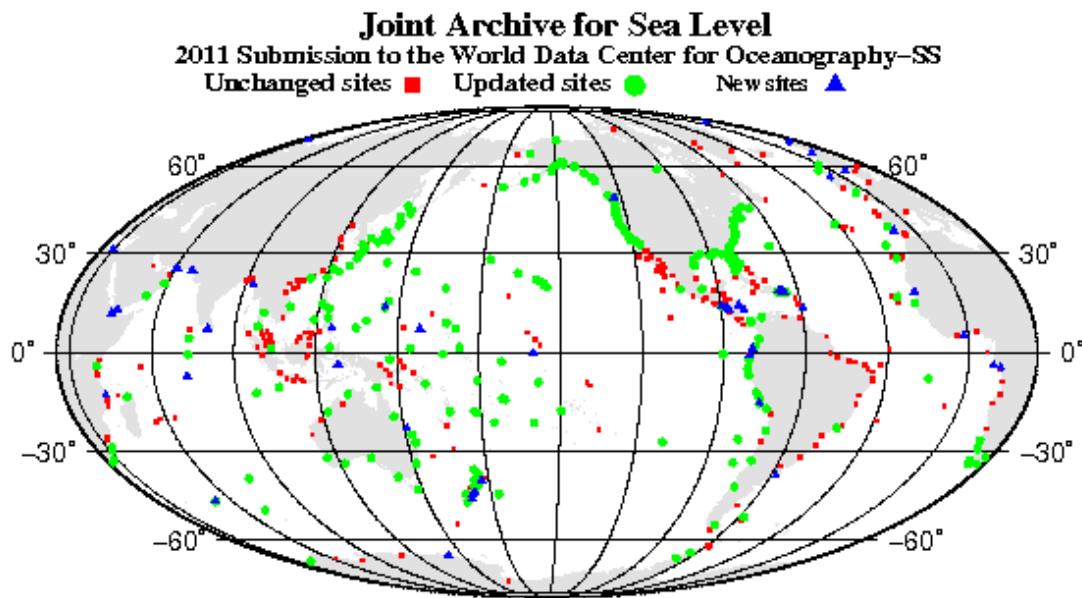


Figure 1. As of November 2011, 631 series have been contributed to the JASL from over 100 agencies representing over 90 countries. The symbols note the November 2011 status relative to May 2009.

2. DATA HOLDINGS November 2011

The JASL prepares scientifically valid data sets of hourly, daily, and monthly values, which are submitted annually to international data banks and are made readily available in a more timely fashion through the Internet. As of November 2011, 631 series with 14,515 series-years (Appendix A.1) of quality-assured data have been submitted to the WDC-SS, US NODC, the Permanent Service for Mean Sea Level (PSMSL), and the CLIVAR 'Delayed-Mode' Data Assembly Center at the British Oceanographic Data Center (BODC).

Over the past year, 50 new series with 623 series-years (Appendix A.2) have been added to the JASL. The locations are depicted as blue triangles in Figure 1. New series were made available in 30 countries: Argentina, Australia, Barbados, Cameroon, Congo, Colombia, Djibouti, Ecuador, Egypt, El Salvador, France, Ghana, Indonesia, Iran, Ireland, Mauritania, Micronesia, Mozambique, Myanmar, New Zealand, Nicaragua, Norway, Pakistan, Peru, Philippines, Portugal, Sri Lanka, USA, UK, and Yemen.

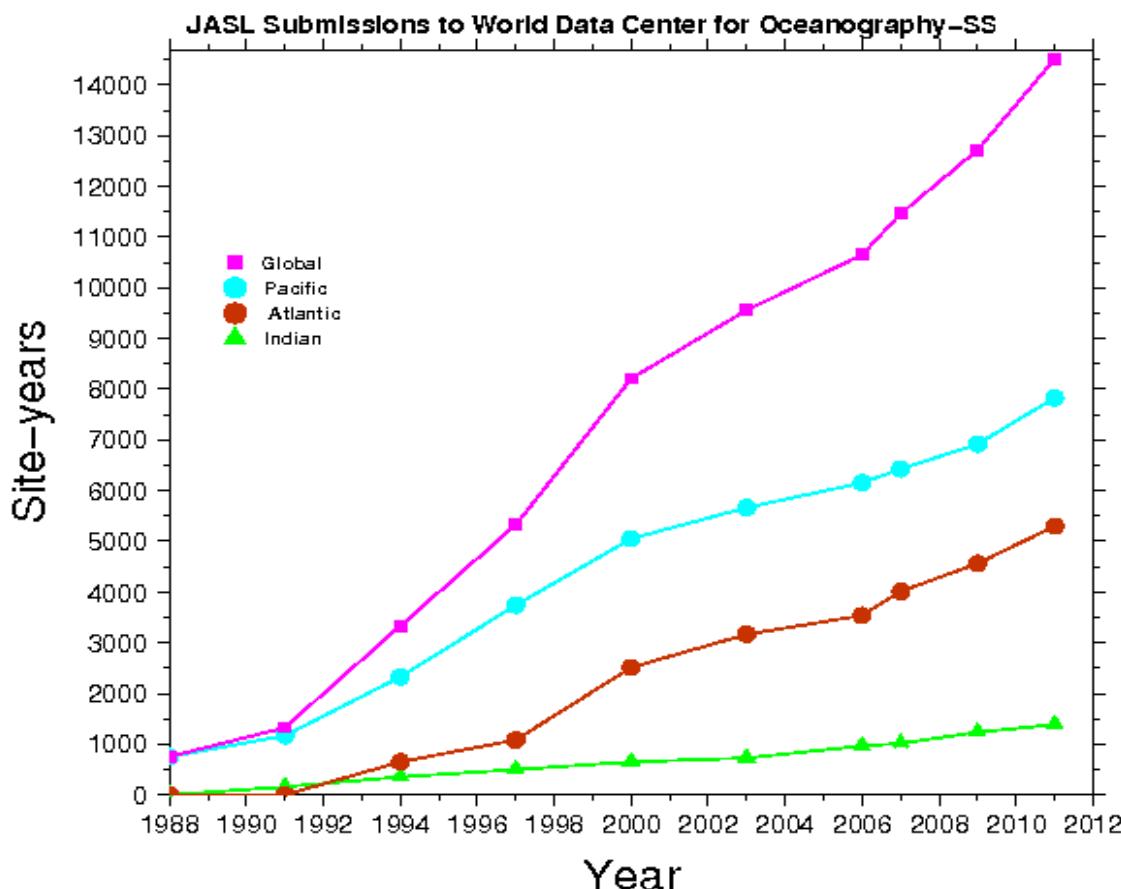


Figure 2. Cumulative site-years by ocean depicting growth of the data holdings. The total holdings have increased by 1,802 site-years or 14% relative to 2009.

Several unique sites have multiple independent series due to reference levels that have not been linked from one time span to the next. In several cases, a series was broken into multiple segments at the point of a reference level shift. For the given site, if new time span(s) that were not linked to the reference level of the existing series were added, then a separate series was established. The filename of each site with multiple series is appended by letters and the filenames are ordered chronologically (i.e. the earliest data is version A, e.g. Callao-A and Callao-B). Thus, series names are changed if the series is extended backwards and the new span is not linked to the same reference level.

Over the past year, the JASL updated 225 existing series with 1,198 site-years (Figure 1 and Appendix A.3), which includes 229 site-years extended backwards (Appendix A.4) for 11 series. Pursuit of data rescue continues at the JASL (Caldwell, 2003) through motivation from the GLOSS data rescue effort and the Global Ocean Data Rescue and Archeology (GODAR) project (Levitus et al., 2000). In support of a study of climate change influence on tidal range in the eastern Pacific (Jay, 2009), historic data from three NOAA-NOS locations on the west coast (Port Angeles, Santa Monica, and Toke Point in Willapa Bay) were acquired, processed, calibrated, and submitted in 2010 to the JASL by Dr. David Jay and Dr. Stefan Talke of Portland State University. NOAA/NOS also made available earlier data for six sites (San Francisco, Port San Luis, La Jolla, Corpus Christi, Fernandina Beach, and San Juan). The Instituto Geografico Nacional of El Salvador provided a new update of historic data from 1962-1970. The Proudman Oceanographic Laboratory extended back the Faraday series by 24 years.

Moreover, 969 site-years were added to existing series forward in time. The JASL set now includes 240 series with 2009 data and 184 with 2010 (Appendix A.5). Since May 2009, the total number of new and updated site-years in the archive has increased by 14% (Figure 2). A large number of stations in the GSLN installed and operated by the UHSLC have not been updated for several years. The delay is caused by the transition to radar gauges at most sites and the need to have adequate overlaps with the existing gauges for quality control and reference level checks.

Existing years in the JASL archive have also been replaced since 2009 when necessary. A summary of actions is given in Appendix A.6. The UHSLC made minor level adjustments to 8 series for select years. The National Tidal Center of Australia replaced historic data for Broome and Darwin to a new datum and Davis for a timing error. NOAA/NOS replaced select years of Guam and Santa Barbara. Through input from a hydrographer in the French navy, it was pointed out that sites in the Canary and Cape Verde Islands were incorrectly time referenced with subsequent replacements. 2007 data from sites on Taiwan had level corrections applied. Service d'Observation ROSAME provided reference level corrections for Kerguelen. Marine Environmental Data Service of Canada provided a replacement of historic data for Victoria, BC. Replacements for Nakanoshima and Syowa were provided by the Japan Oceanographic Data Center. One series, Vung Tau 652A was removed since the same year is available in Vung Tau series 383A.

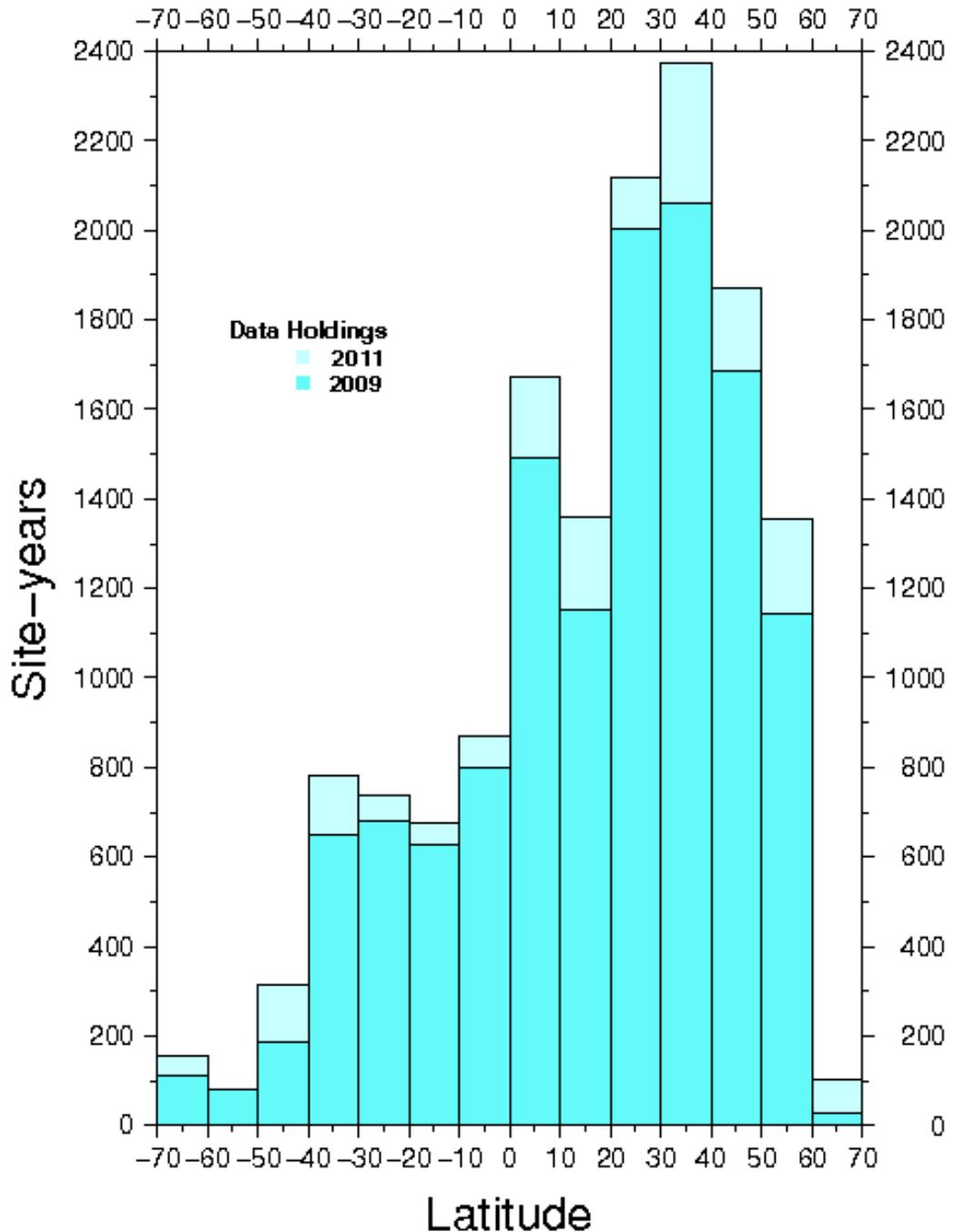


Figure 3. Distribution of site-years by latitude and growth relative to May 2009.

The meridional distribution of the data holdings is shown in Figure 3 which depicts the highest concentration of sites in the northern hemisphere. Since 2009, updates were made in all latitudinal zones except 50-60S. Historically the holdings at the JASL focused on the tropics and subtropics as a reflection of the TOGA program. Since 1995, holdings at high latitude stations have steadily increased as WOCE stations were

received, GLOSS sites were sought, and NOAA-NOS continental locations were acquired. Since 2009, new sites from mid to high latitude locations have been added from four sites in New Zealand, five sites in Norway, one in Ireland, one from southern Indian Ocean by France (Dumont d'Urville), and one in Argentina (Mar del Plata) (Appendix A.2).

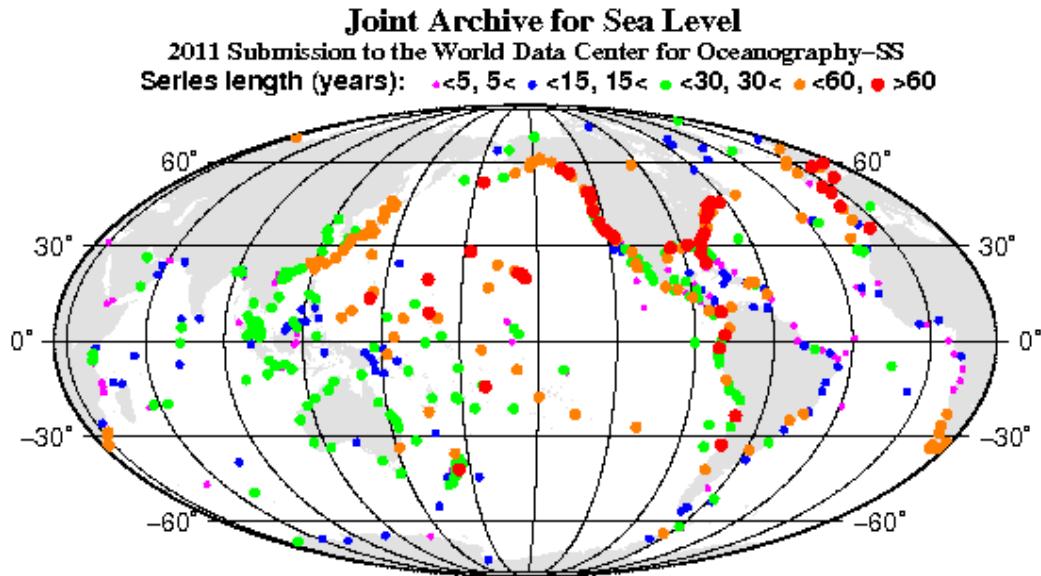


Figure 4. Lengths of the time series as of November 2011. The size of the circle represents the length of the series. The majority of the record lengths are between 5 and 15 years.

The spatial distribution by site of the series lengths is depicted in Figure 4. This shows the excellent space and time coverage of the tropical Pacific, the Japanese and Chinese coasts, selected sites in South, Central, and North America, and Europe. Since 2009, many of the stations in the Pacific off Central and South America were updated with new and historic data, allowing many stations to have over 30-year long time series. This figure also shows the shorter time spans of the records in the Indian Ocean and the tropical Atlantic.

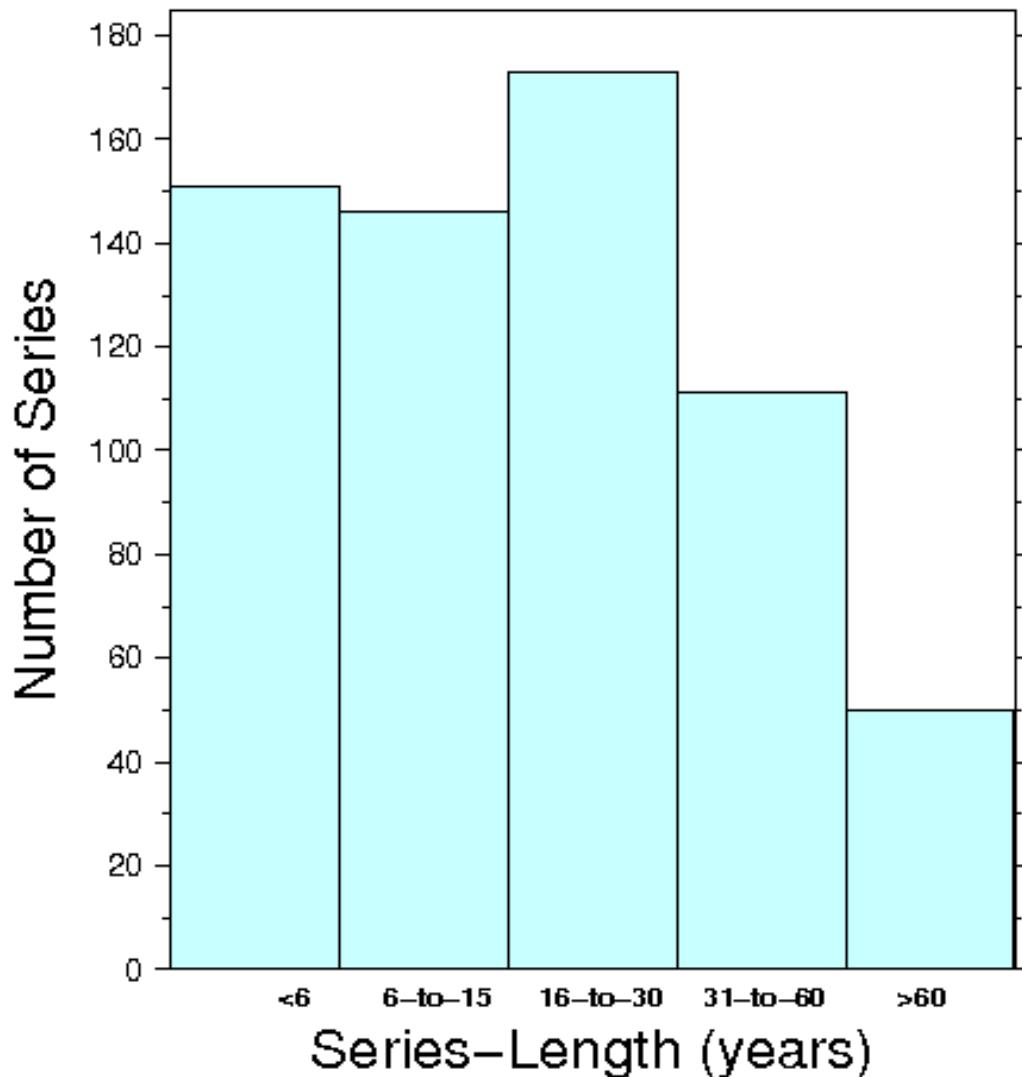


Figure 5. Lengths (years) of the time series. Relative to May 2009, the number of series >30 and <61 years has increased by 15 (+16%) and for >60 years by 9(+22%).

The series are of variable length (Figure 4). Since May 2009, the greatest concentration has shifted upward from between 6 to 15 years (Figure 5) to between 16 to 30 years, a reflection of the aging contemporary tide gauge network and a result of the motivation for open policy of data exchange under the scientific umbrella of GLOSS. The number of series with records longer than 30 years has expanded to 117 (16% increase), while the series count of greater than 60 years to 50 (22% increase) relative to May 2009. The longer series support global sea level rise research and a minimum of 60 years has been defined as critical by Douglas (2001). For the 50 series with at least 60-year length, 43 (86%) have a completeness index of at least 90%. The longest series in the JASL is from Brest, France at 161 years. Series that reached the 60-year length since May 2009 were added for sites in the tropical Pacific, Aleutian Islands, South and North America, and northern Europe (Appendix A7).

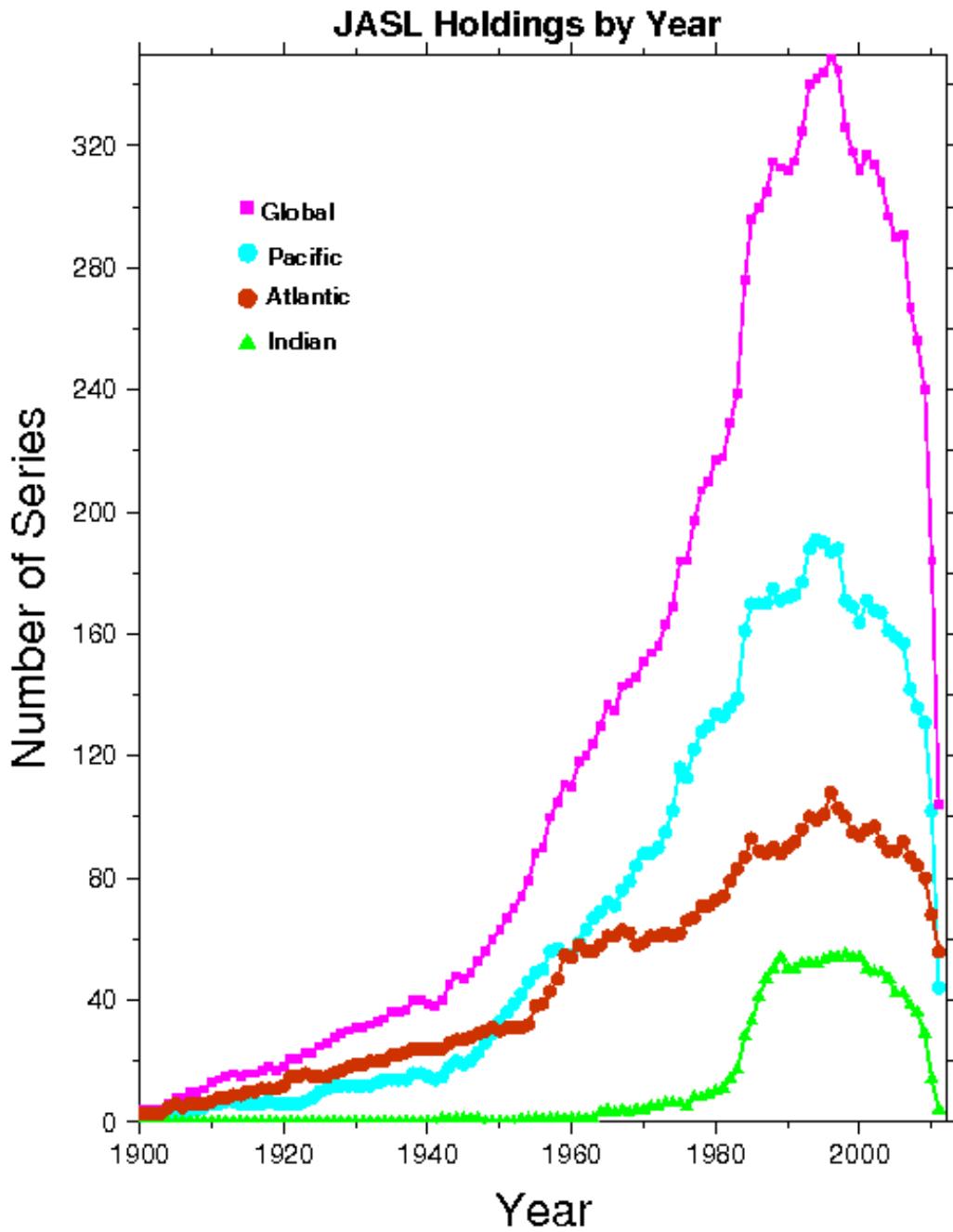


Figure 6. Data distribution by year and ocean.

The temporal coverage of the sea level records is depicted in Figure 6. This shows the dominance of data availability starting in the 1980s, mostly a reflection of the TOGA program. The WOCE, CLIVAR, and GLOSS programs have supported continued international data exchange into the 1990s. The figure also shows the typical time lag from collection to public dissemination, which is on the order of a few years.

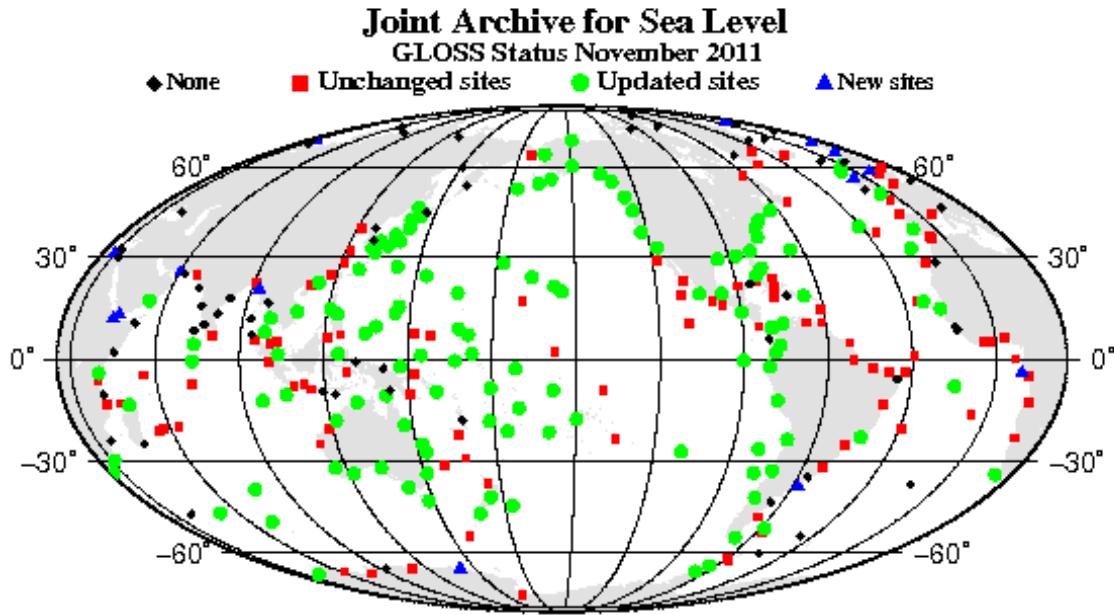


Figure 7. GLOSS Core Network status of JASL data holdings November 2011 relative to May 2009.

The JASL is a Global Sea Level Observing System (GLOSS) archive center. In the 2010 GLOSS station list update, the GLOSS Core Network (GCN) consists of 289 stations. Since May 2009, the JASL has added 14 new GCN sites, bringing the total number of unique GLOSS locations in the JASL to 248, or 86% of the total (Figure 7 and Appendix A8). This increases the GCN holdings to 8,166 site-years in the JASL. Multiple series for a single GLOSS site is common. A GLOSS site is not tied to a particular station, which can be destroyed or phased out. Rather, a nominal GLOSS number represents an area. For example, GLOSS site 44 in Singapore has been assigned to Victoria Dock, Keppel Harbour, and Tanjong Pagar.

Of the 171 stations identified in the Global Climate Observing System (GCOS), the JASL presently holds 147 sites, or 86%.

3. DATA REQUESTS

The archive is presently composed of 631 sites for 14,515 site-years with hourly, daily, and monthly values. The abundance of JASL data is possible through the generous contributions of over 100 agencies representing over 90 countries (Appendix B). On a quasi-annual basis, the data sets and documentation files are submitted to international data centers (WDC-SS, PSMSL, and BODC). Data can be acquired from these centers or directly from the JASL. Over the most recent year, the JASL served 9,512 requests consisting of 824,717 series-years for 49,730 series.

The JASL data are available in a legacy ASCII text format. A format description is given with each data request and is not repeated here. Software is available as described below for translating the format to a more generic “date time single-value” format, which is compatible with many common software tools. Most JASL data are also available in NetCDF format via the UHSLC Fast-delivery system as explained below.

3.1 World Wide Web

UHSLC has maintained an Internet site since 1994. Users can navigate via lists or through an in-house developed geographical information system. The URL for this site is:

<http://uhslc.soest.hawaii.edu>

There are three modes of data availability:

- 1) **Real-time data** for stations operated by the UHSLC, at the highest available frequency, most often one-minute samples.
- 2) **Fast-delivery (FD)** with preliminary calibration and quality control, typically with a one-month lag from collection, for hourly, daily, and monthly values. Products such as global sea level deviations and anomalies, Pacific tropical current or upper ocean volume indices, or blended global output from altimetry, are generated monthly.
- 3) **Research quality (JASL)** are the verified hourly, daily, and monthly data saved for posterity.

As JASL data become available, the FD set is updated to match the JASL holdings for version control; thus the FD set is inclusive of the JASL set, except for select series in the JASL yet not in the FD. The FD set is also provided through a DODS (OpenDAP) server: <http://ilikai.soest.hawaii.edu/uhslc/fast.html>.

3.2 Anonymous FTP

The JASL has hourly, daily, monthly values in an ``anonymous'' FTP account.

For those on Internet, the account may be accessed by typing:

<ftp://ilikai.soest.hawaii.edu/rqds>

or directly following these instructions:

```
ftp ilikai.soest.hawaii.edu
user: anonymous
password: please enter your Internet address
cd rqds
```

Once you have successfully logged on, please see the README file for information and instructions. The ASCII data files in the JASL final archive format are within a subdirectory named ``rqds" and are organized by ocean. This FTP account contains the most recent holdings of the JASL data set for series that have been quality controlled and documented. The hourly, daily, monthly, document and inventory files are updated a few times a year as new sets are added to the JASL.

The hourly data files are grouped by year, then compressed using Info-Zip into a single file per time series. The Info-Zip web site is at <http://www.cdrom.com/pub/infozip> and the software can be directly downloaded from <ftp://ftp.cdrom.com/pub/infozip/>. This freeware zip utility is compatible to most platforms and operating systems.

Software for converting from the JASL legacy format to a generic format can be found at this FTP site in directory /software. There are versions for linux, MSDOS, and Sun (Solaris) operating systems. For each, programs are available for the hourly, daily, and monthly values.

3.3 Sea Level CDROM

A CDROM was prepared by the JASL in November 2011 to facilitate data dissemination. It contains data and this report. The complete archive of hourly, daily, and monthly values is included. Requests for a copy can be sent directly to the JASL.

3.4 Direct Requests

Requests by phone, email, or mail can be sent to either

Joint Archive for Sea Level
Dept. of Oceanography
University of Hawaii at Manoa
1000 Pope Rd. MSB 316
Honolulu, Hawaii 96822 USA
phone: 808-956-4105
fax: 808-956-2352
email: caldwell@hawaii.edu or Patrick.Caldwell@noaa.gov
WWW: <http://ilikai.soest.hawaii.edu/jasl.html>

or

The World Data Center-SS for Oceanography
c/o NOAA/NESDIS/NODC
User Services E/OC1
SSMC3, 4th Floor
1315 East-West Highway
Silver Spring, MD 20910-3282 USA
phone: 301-713-3277 or -3278

fax: 301-713-3302
email: services@nodc.noaa.gov
WWW: <http://www.nodc.noaa.gov>

Some stations may have unresolved problems. These data are retained at the UH Sea Level Center and may be obtained on a case-by-case basis. Questions concerning the data and preparation should be directed to the JASL.

ACKNOWLEDGEMENTS

We are deeply appreciative to the technicians, tide station operators, digitizers, data processors, coordinators, principle investigators, data managers, division chiefs, and directors of the many agencies who have made possible the collection and processing of the raw data and the contribution of the finalized data to the Joint Archive for Sea Level. The UHSLC support of this report and the WDC-SS posterity archive is funded by NOAA Cooperative Agreement [NA09OAR4320075](#). The views expressed herein are those of the authors and do not necessarily reflect the view of NOAA or any of its sub-agencies.

REFERENCES

- Caldwell, P., and B. Kilonsky, 1992. *Data processing and quality control at the TOGA Sea Level Center*. Joint IAPSO-IOC Workshop on Sea Level Measurements and Quality Control, Paris, 12-13 October, 1992. IOC Workshop Report No. 81, UNESCO. pp. 122-135.
- Caldwell, P. 1998. *Sea Level Data Processing on IBM-PC Compatible Computers, Version 3.0 (Year 2000 Compliant)*. JIMAR Contribution No. 319, SOEST, University of Hawaii, 72 pp.
- Caldwell, P. 2003. NOAA support for global sea level data rescue. *Earth System Monitor*, Vol. 14, No. 1, Fall 2003. pp. 1-5.
- Douglas, B. 2001. Sea level changes in the era of the recording tide gauge, In: *Sea Level Rise: History and Consequences* (Douglas B., Kearney M. and Leatherman S., eds), pp 37-64. Academic Press, London.
- Jay, David A., 2009. Evolution of tidal amplitudes in the eastern Pacific Ocean. *Geophysical Research Letters*, Vol. 36, L04603.
- Levitus, S., R. Gelfeld, M. E. Conkright, T. P. Boyer, D. Johnson, T. O'Brien, C. Stephens, C. Forgy, O. Baranova, I. Smolyar, G. Trammell, R. Moffatt, 2000: *Results of the NODC and IOC Data Archaeology and Rescue projects. Key to Oceanographic*

Records Documentation No. 19, National Oceanographic Data Center, Wash., D.C., 19 pp., 7 tables, 16 figs

Kilonsky, B. J. and P. Caldwell, 1991. *In pursuit of high-quality sea level data*. IEEE Oceans Proceedings. Vol. 2, October 1-3, 1991.

Mitchum, G. T., 1994. *Comparison of TOPEX sea surface heights and tide gauge sea levels*. Journal of Geophysical Research, Vol. 99, No. C12, pp. 24541-24553.

UNESCO, 1993. *IOC Training Course for the Global Sea Level Observing System (GLOSS) directed to the African and South American Portuguese- and Spanish-speaking Countries*. Sao Paulo, Brazil, 1-19 February, 1993. IOC Training Course Reports No. 20.

UNESCO, 1995. *IOC/GLOSS-GOOS Training Workshop on Sea-Level Data Analysis*. Geodetic and Research Branch, Survey of India. Dehra Dun, India. 21 November - 1 December, 1995. IOC Training Course Reports No. 39, 17 p.

UNESCO, 2003, COI-SHOA Taller de Entrenamiento en Observacion y Analysis del Nivel del Mar. 7-17 de abril de 2003, Valparaiso, Chile. IOC Training Course Reports No. 87, 33 p.

UNESCO, 2006, IOC/JCOMM Training Course for the Global Sea Level Observing System (GLOSS) on Sea Level Observation and Analysis. 15-26 May, 2006, Tokyo, Japan. IOC Training Course Reports No. 87, 28 p.

APPENDICES

A. Station Lists

A.1 2009 Submission to the World Data Center

Pacific Ocean: 312 series with 7,828 site-years; CI: Completeness Index

JASL	GLOSS	STATION	COUNTRY	ORIGINATOR	YEARS	CI
681A		San Martin-A	Argentina	Alfred Wegener Inst.	1995-1995	8
681B		San Martin-B	Argentina	Alfred Wegener Inst.	1998-1998	5
681C		San Martin-C	Argentina	Alfred Wegener Inst.	1998-1999	100
682A		Dallmann-A	Argentina	Alfred Wegener Inst.	1996-1997	99
682B		Dallmann-B	Argentina	Alfred Wegener Inst.	1997-1997	69
682C		Dallmann-C	Argentina	Alfred Wegener Inst.	1998-1999	100
062A	124	Norfolk Island-A	Australia	CSIRO	1985-1986	98
062B	124	Norfolk Island-B	Australia	CSIRO	1994-1999	100
330A		Rosslyn Bay	Australia	Nat. Tidal Ctr., BOM	1993-2009	100
331A	58	Brisbane	Australia	Nat. Tidal Ctr., BOM	1984-2009	98
332A	59	Bundaberg	Australia	Nat. Tidal Ctr., BOM	1984-2009	98
333A	57	Fort Denison	Australia	Nat. Tidal Ctr., BOM	1965-2009	95
334A	60	Townsville	Australia	Nat. Tidal Ctr., BOM	1984-2009	100
335A	56	Spring Bay	Australia	Nat. Tidal Ctr., BOM	1985-2009	96
336A	61	Booby Island	Australia	Nat. Tidal Ctr., BOM	1988-2009	93
339A		Hobart	Australia	Nat. Tidal Ctr., BOM	1985-2006	85
399A	148	Lord Howe-A	Australia	Scripps Inst. Ocean.	1958-1967	80
399B	148	Lord Howe-B	Australia	Nat. Tidal Ctr., BOM	1991-2006	96
680A	130	Macquerie Is.-A	Australia	Nat. Tidal Ctr., BOM	1912-1913	97
680B	130	Macquerie Is.-B	Australia	Nat. Tidal Ctr., BOM	1968-1972	45
680C	130	Macquerie Is.-C	Australia	Nat. Tidal Ctr., BOM	1993-2007	79
540A	155	Prince Rupert-A	Canada	MEDS	1910-1918	79
540B	155	Prince Rupert-B	Canada	MEDS	1963-2010	99
542A	156	Tofino	Canada	MEDS	1963-2010	95
543A		Victoria,BC	Canada	MEDS	1909-2007	99
021A	176	Juan Fernandez-A	Chile	UH Sea Level Center	1977-1984	67
021B	176	Juan Fernandez-B	Chile	SHOA	1985-2010	89
022A	137	Easter-A	Chile	SHOA	1957-1958	97
022B	137	Easter-B	Chile	SHOA	1962-1963	100
022C	137	Easter-C	Chile	SHOA	1970-2010	83
035A	177	San Felix	Chile	SHOA	1987-2010	83
080A	174	Antofagasta	Chile	SHOA	1945-2010	93

081A	175	Valparaiso	Chile	SHOA	1944-2010	85
083A		Arica	Chile	SHOA	1982-1998	98
088A		Caldera	Chile	SHOA	1980-1998	97
599A		Diego Ramirez	Chile	SHOA	1991-1997	95
684A	178	Puerto Montt	Chile	SHOA	1980-2010	94
329A	77	Hong Kong-A	China	Hong Kong Observatory	1962-1985	97
329B	77	Hong Kong-B	China	Hong Kong Observatory	1986-2010	99
376A	247	Xiamen	China	PRC NODC	1954-1997	100
630A	79	Dalian-A	China	PRC NODC	1975-1990	98
631A	79	Laohutan-A	China	PRC NODC	1991-1997	100
632A	94	Kanmen-A	China	PRC NODC	1975-1997	100
633A	283	Lusi-A	China	PRC NODC	1975-1996	98
635A	78	Zhapo-A	China	PRC NODC	1975-1997	100
636A		Beihai	China	PRC NODC	1975-1997	100
637A		Dongfang	China	PRC NODC	1975-1997	100
638A		Haikou	China	PRC NODC	1976-1997	100
639A		Lianyungang	China	PRC NODC	1975-1997	100
641A		Shanwei	China	PRC NODC	1975-1997	98
642A		Shijiusuo	China	PRC NODC	1975-1997	100
085A	170	Buenaventura	Colombia	IDEAM	1953-2011	92
303A	171	Tumaco	Colombia	IDEAM	1951-2011	83
023A	139	Rarotonga-A	Cook Islands	UH Sea Level Center	1977-1997	98
023B	139	Rarotonga-B	Cook Islands	Nat. Tidal Ctr., BOM	1993-2009	99
024A	143	Penrhyn	Cook Islands	UH Sea Level Center	1977-2010	95
087A	167	Quepos	Costa Rica	SERMAR	1961-1994	83
396A		Puntarenas	Costa Rica	SERMAR	1970-1980	71
003A	169	Baltra-A	Ecuador	National Ocean Service	1968-1977	93
003B	169	Baltra-B	Ecuador	UH Sea Level Center	1985-2010	86
030A		Santa Cruz	Ecuador	UH Sea Level Center	1978-2007	95
089A		Manta-A	Ecuador	INOCAR	1979-1981	100
089B		Manta-B	Ecuador	INOCAR	1990-2008	82
091A	172	La Libertad	Ecuador	INOCAR	1949-2010	97
098A		Esmeraldas	Ecuador	INOCAR	1990-2010	92
082A	182	Acajutla-A	El Salvador	Inst. Geograf. Nacional	1962-2001	96
082B	182	Acajutla-B	El Salvador	Inst. Geograf. Nacional	2001-2009	52
086A		La Union-A	El Salvador	National Ocean Service	1954-1980	77
086B		La Union-B	El Salvador	Inst. Geograf. Nacional	2001-2010	74
001A	115	Pohnpei-A	Fd St Micronesia	Scripps Inst. Ocean.	1969-1971	100
001B	115	Pohnpei-B	Fd St Micronesia	UH Sea Level Center	1974-2004	98
001C	115	Pohnpei-C	Fd St Micronesia	Nat. Tidal Ctr., BOM	2001-2009	100
008A	119	Yap-A	Fd St Micronesia	Scripps Inst. Ocean.	1951-1952	100
008B	119	Yap-B	Fd St Micronesia	UH Sea Level Center	1969-2005	92
029A	117	Kapingamarangi	Fd St Micronesia	UH Sea Level Center	1978-2008	94

054A	116	Truk	Fd St Micronesia	National Ocean Service	1963-1991	89
018A	122	Suva-A	Fiji	National Ocean Service	1972-1997	91
018B	122	Suva-B	Fiji	Nat. Tidal Ctr., BOM	1998-2009	99
402A		Lautoka	Fiji	Nat. Tidal Ctr., BOM	1992-2009	99
019A	123	Noumea	France	UH Sea Level Center	1967-2003	99
391A	165	Clipperton-A	France	NOAA/PMEL	1985-1985	47
391B	165	Clipperton-B	France	NOAA/PMEL	1986-1988	100
015A	140	Papeete-A	French Polynesia	UH Sea Level Center	1969-1975	91
015B	140	Papeete-B	French Polynesia	National Ocean Service	1975-2009	97
016A	138	Rikitea	French Polynesia	UH Sea Level Center	1969-2003	92
017A		Hiva Oa	French Polynesia	UH Sea Level Center	1977-1980	75
031A	142	Nuku Hiva	French Polynesia	UH Sea Level Center	1982-1997	49
590A		Matavai	French Polynesia	Scripps Inst. Ocean.	1958-1967	65
301A		Puerto Quetzal-A	Guatemala	UH Sea Level Center	1983-1984	90
301B		Puerto Quetzal-B	Guatemala	UH Sea Level Center	1992-1995	77
301C		Puerto Quetzal-C	Guatemala	National Ocean Service	2001-2002	100
670A		Champerico	Guatemala	Oregon State University	1974-1975	98
675A		San Jose	Guatemala	Oregon State University	1955-1975	93
033A	69	Bitung	Indonesia	BAKOSURTANAL	1986-2009	37
410A		Lungsurannaga	Indonesia	Japan Ocean. Data Cen.	1943-1944	95
411A		Balikpapan	Indonesia	Japan Ocean. Data Cen.	1942-1943	100
414A		Bajor	Indonesia	Japan Ocean. Data Cen.	1943-1944	97
047A	103	Chichijima	Japan	Japan Meteor. Agency	1975-2010	100
049A	104	Minamitorishima	Japan	Japan Meteor. Agency	1997-2010	93
345A		Nakano Shima	Japan	Japan Ocean. Data Cen.	1984-2010	99
347A	327	Abashiri	Japan	Japan Meteor. Agency	1968-2010	98
348A	326	Hamada	Japan	Japan Meteor. Agency	1984-2010	96
349A	325	Toyama	Japan	Japan Meteor. Agency	1967-2010	99
350A	89	Kushiro	Japan	Japan Meteor. Agency	1963-2010	97
351A	87	Ofunato	Japan	Japan Meteor. Agency	1965-2010	100
352A	86	Mera	Japan	Japan Meteor. Agency	1965-2010	95
353A	85	Kushimoto	Japan	Japan Meteor. Agency	1961-2010	97
354A	82	Aburatsu	Japan	Japan Meteor. Agency	1961-2010	100
355A	81	Naha	Japan	Japan Meteor. Agency	1966-2010	100
356A		Maisaka	Japan	Japan Meteor. Agency	1968-2010	97
357A		Miyakejima	Japan	Japan Ocean. Data Cen.	1964-2010	99
358A		Hosojima	Japan	Japan Ocean. Data Cen.	1933-1975	86
359A		Naze	Japan	Japan Ocean. Data Cen.	1957-2010	94
360A	324	Wakkani	Japan	Japan Meteor. Agency	1967-2010	99
362A	83	Nagasaki	Japan	Japan Meteor. Agency	1985-2010	100
363A		Nishinoomote	Japan	Japan Ocean. Data Cen.	1965-2010	98
364A	88	Hakodate	Japan	Japan Meteor. Agency	1964-2010	94
365A		Ishigaki	Japan	Japan Meteor. Agency	1969-2010	99

375A		Hachinohe	Japan	Japan Meteor. Agency	1980-2010	99
320A	293	Cendering	Malaysia	Dept. Survey/Mapping	1984-2006	99
321A		Johor Baharu	Malaysia	Dept. Survey/Mapping	1983-2006	96
322A		Kuantan	Malaysia	Dept. Survey/Mapping	1983-2006	99
323A		Tioman	Malaysia	Dept. Survey/Mapping	1985-2006	97
324A		Sedili	Malaysia	Dept. Survey/Mapping	1986-2006	98
325A		Kukup	Malaysia	Dept. Survey/Mapping	1985-2006	97
326A		Geting	Malaysia	Dept. Survey/Mapping	1986-2006	99
385A		Tawau	Malaysia	Dept. Survey/Mapping	1987-2006	95
386A		Kota Kinabalu	Malaysia	Dept. Survey/Mapping	1987-2006	92
387A		Bintulu	Malaysia	Dept. Survey/Mapping	1992-2006	89
388A		Miri	Malaysia	Dept. Survey/Mapping	1992-2006	42
389A		Sandakan	Malaysia	Dept. Survey/Mapping	1993-2006	97
034A	161	Cabo San Lucas	Mexico	CICESE	1973-2003	81
036A	160	Guadalupe	Mexico	CICESE	1977-1985	75
090A	162	Socorro	Mexico	CICESE	1957-1959	81
305A		Cedros Island	Mexico	CICESE	1976-1989	75
307A		San Felipe	Mexico	UNAM	1982-1986	52
308A		San Quintin	Mexico	CICESE	1977-1990	97
310A		Bahia Los Angeles	Mexico	CICESE	1973-1994	74
316A	267	Acapulco-A,Gro.	Mexico	UNAM	1952-1995	91
316B	267	Acapulco-B,Gro.	Mexico	Secretaria de Marina	1999-2005	88
317A		Ensenada	Mexico	UNAM	1956-1991	84
318A		Puerto Madero	Mexico	UNAM	1986-1988	99
319A		Loreto	Mexico	CICESE	1975-1988	73
393A		Puerto Vallarta	Mexico	UNAM	1973-1991	40
394A		Salina Cruz	Mexico	UNAM	1952-1991	81
395A	163	Manzanillo-A	Mexico	UNAM	1953-1982	95
395B	163	Manzanillo-B	Mexico	National Ocean Service	1992-2003	78
397A		Guaymas	Mexico	UNAM	1953-1986	81
671A		La Paz	Mexico	UNAM	1952-1983	71
672A	164	Puerto Angel	Mexico	UNAM	1962-1984	74
673A		Mazatlan	Mexico	UNAM	1953-1975	97
674A		San Carlos	Mexico	UNAM	1968-1983	51
676A		Topolobampo	Mexico	UNAM	1956-1974	94
677A		Yavaros	Mexico	UNAM	1970-1973	85
070A	127	Auckland	New Zealand	Royal New Zealand Navy	1984-1988	100
071A	101	Wellington	New Zealand	LINZ	1944-2010	97
072A	129	Bluff	New Zealand	LINZ	1984-2010	60
073A		Tauranga	New Zealand	LINZ	1984-2010	87
074A		Westport	New Zealand	Royal New Zealand Navy	1984-1985	100
075A		Wanganui	New Zealand	Royal New Zealand Navy	1984-1985	97
076A		Taranaki	New Zealand	LINZ	1984-2010	89

077A		Nelson	New Zealand	LINZ	1984-2010	58
078A		Gisborne	New Zealand	Royal New Zealand Navy	1984-1985	98
079A	128	Chatham	New Zealand	UH Sea Level Center	2001-2010	51
398A		Marsden Point	New Zealand	LINZ	1975-2010	81
403A		Jackson	New Zealand	Nat. Tidal Ctr., BOM	1999-2009	100
663A	134	Scott Base	New Zealand	NIWA	2001-2006	92
665A		Timaru	New Zealand	LINZ	1987-2010	57
667A		Lyttelton	New Zealand	LINZ	1995-2010	97
668A		Napier	New Zealand	LINZ	1989-2010	80
669A		Port Chalmers	New Zealand	LINZ	1985-2010	60
679A		Corinto-A	Nicaragua	National Ocean Service	1967-1967	99
679B		Corinto-B	Nicaragua	National Ocean Service	2001-2001	50
028A	118	Saipan-A	N. Mariana Is.	Japan Ocean. Data Cen.	1938-1940	97
028B	118	Saipan-B	N. Mariana Is.	UH Sea Level Center	1978-2009	87
698A		Tinian	N. Mariana Is.	USGS	1991-1997	93
300A		Naos-A	Panama	Scripps Inst. Ocean.	1961-1965	99
300B		Naos-B	Panama	National Ocean Service	1991-1997	84
302A	168	Balboa	Panama	Autoridad Canal Panama	1907-2010	98
304A		Pto. Armuelles-A	Panama	Inst. Geograf. Nac.	1955-1968	95
304B		Pto. Armuelles-B	Panama	Inst. Geograf. Nac.	1983-2001	94
010A	65	Rabaul	Papua New Guinea	UH Sea Level Center	1966-1997	85
048A		Anewa Bay	Papua New Guinea	UH Sea Level Center	1968-1977	85
063A		Wewak	Papua New Guinea	CSIRO	1984-1994	82
064A		Port Moresby	Papua New Guinea	CSIRO	1984-1993	98
065A		Manus	Papua New Guinea	CSIRO	1984-1994	73
066A		Madang	Papua New Guinea	CSIRO	1984-1998	81
067A		Lae	Papua New Guinea	CSIRO	1984-1997	83
068A		Kavieng	Papua New Guinea	CSIRO	1984-1994	95
069A	63	Alotau	Papua New Guinea	CSIRO	1984-1995	62
400A	331	Lombrum	Papua New Guinea	Nat. Tidal Ctr., BOM	1994-2009	93
084A		Lobos de Afuera	Peru	DHNM	1982-2009	96
092A		Talara-A	Peru	National Ocean Service	1950-1965	92
092B		Talara-B	Peru	DHNM	1988-2010	76
093A	173	Callao-A	Peru	National Ocean Service	1950-1965	98
093B	173	Callao-B	Peru	DHNM	1970-2010	97
094A		Matarani-A	Peru	National Ocean Service	1954-1964	98
094B		Matarani-B	Peru	DHNM	1992-2010	84
096A		San Juan-A	Peru	DHNM	1978-2003	80
096B		San Juan-B	Peru	DHNM	2003-2010	94
678A		Paita-A	Peru	National Ocean Service	1981-1984	100
678B		Paita-B	Peru	DHNM	1988-2009	88
683A		Pisco-A	Peru	DHNM	1985-1990	67
683B		Pisco-B	Peru	DHNM	1991-2010	71

370A	73	Manila	Philippines	Ocean. Surveys Div.	1984-2008	90
371A	72	Legaspi	Philippines	Ocean. Surveys Div.	1984-2007	86
372A	71	Davao-A	Philippines	Ocean. Surveys Div.	1984-1997	92
372B	71	Davao-B	Philippines	Ocean. Surveys Div.	1998-2008	54
373A	70	Jolo	Philippines	Ocean. Surveys Div.	1984-1995	86
379A		Cebu	Philippines	Ocean. Surveys Div.	1998-2008	87
380A		Puerto Princesa	Philippines	Ocean. Surveys Div.	1998-2007	83
338A		Macau	Portugal	Inst. Hidro. Marinha	1978-1985	80
005A	112	Majuro-A	Rep. Marshall I.	UH Sea Level Center	1968-1999	92
005B	112	Majuro-B	Rep. Marshall I.	Nat. Tidal Ctr., BOM	1993-2009	98
006A		Enewetak-A	Rep. Marshall I.	Scripps Inst. Ocean.	1951-1971	98
006B		Enewetak-B	Rep. Marshall I.	UH Sea Level Center	1974-1979	94
055A	111	Kwajalein	Rep. Marshall I.	National Ocean Service	1946-2011	98
007A	120	Malakal-A	Rep. of Belau	Japan Ocean. Data Cen.	1926-1939	92
007B	120	Malakal-B	Rep. of Belau	UH Sea Level Center	1969-2009	96
340A		Kaohsiung	Rep. of China	Central Weather Bureau	1980-2010	98
341A		Keelung	Rep. of China	Central Weather Bureau	1980-2010	85
002A	113	Tarawa-A,Betio	Rep. of Kiribati	UH Sea Level Center	1974-1983	78
002B	113	Tarawa-B,Bairiki	Rep. of Kiribati	UH Sea Level Center	1983-1988	98
002C	113	Tarawa-C,Betio	Rep. of Kiribati	UH Sea Level Center	1988-1997	100
002D	113	Tarawa-D,Betio	Rep. of Kiribati	Nat. Tidal Ctr., BOM	1992-2009	93
011A	146	Christmas-A	Rep. of Kiribati	Scripps Inst. Ocean.	1955-1972	89
011B	146	Christmas-B	Rep. of Kiribati	UH Sea Level Center	1974-2003	96
012A		Fanning-A	Rep. of Kiribati	Scripps Inst. Ocean.	1957-1958	88
012B		Fanning-B	Rep. of Kiribati	UH Sea Level Center	1972-1987	95
012C		Fanning-C	Rep. of Kiribati	UH Sea Level Center	1988-1990	78
013A	145	Kanton-A	Rep. of Kiribati	Scripps Inst. Ocean.	1949-1967	100
013B	145	Kanton-B	Rep. of Kiribati	UH Sea Level Center	1972-2007	87
004A	114	Nauru-A	Rep. of Nauru	UH Sea Level Center	1974-1995	95
004B	114	Nauru-B	Rep. of Nauru	Nat. Tidal Ctr., BOM	1993-2009	91
626A	309	Providenya-A	Russia	Inst. Hydromet. Infor.	1977-1985	100
626B	309	Providenya-B	Russia	Inst. Hydromet. Infor.	1986-1989	100
327A	44	Keppel Harbour	Singapore	Port Singapore Auth.	1981-1990	99
337A	44	Victoria Dock	Singapore	Port Singapore Auth.	1972-1981	95
699A	44	Tanjong Pagar	Singapore	Port Singapore Auth.	1988-2010	95
009A	66	Honiara-A	Solomon Islands	UH Sea Level Center	1974-1995	98
009B	66	Honiara-B	Solomon Islands	Nat. Tidal Ctr., BOM	1994-2009	98
328A	39	Ko Lak	Thailand	Naval Hydro. Dept.	1985-2010	94
038A	125	Nuku'alofa	Tonga	Nat. Tidal Ctr., BOM	1990-2009	98
025A	121	Funafuti-A	Tuvalu	UH Sea Level Center	1977-1999	97
025B	121	Funafuti-B	Tuvalu	Nat. Tidal Ctr., BOM	1993-2009	97
014A	107	French Frigate S	USA	UH Sea Level Center	1974-2004	97
026A		Honolulu,Kewalo	USA	UH Sea Level Center	1978-1986	96

027A		Honolulu,Pier 45	USA	UH Sea Level Center	1985-1988	100
039A		Kodiak,Alaska	USA	National Ocean Service	1975-2010	85
040A	302	Adak,Alaska	USA	National Ocean Service	1950-2011	92
041A	102	Dutch Harbor-A,AK	USA	National Ocean Service	1950-1955	100
041B	102	Dutch Harbor-B,AK	USA	National Ocean Service	1982-2011	97
045A		Jarvis	USA	UH Sea Level Center	1957-1957	27
057A	108	Honolulu-A	USA	National Ocean Service	1877-1892	32
057B	108	Honolulu-B	USA	National Ocean Service	1905-2011	98
058A		Nawiliwili	USA	National Ocean Service	1954-2011	99
059A		Kahului	USA	National Ocean Service	1950-2011	93
060A	287	Hilo	USA	National Ocean Service	1927-2011	82
061A		Mokuoloe	USA	National Ocean Service	1957-2011	81
313A		Catalina-A	USA	Scripps Inst. Ocean.	1978-1979	96
313B		Catalina-B	USA	Scripps Inst. Ocean.	1980-1988	86
550A		Massacre Bay,AK	USA	National Ocean Service	1943-1966	88
551A	158	San Francisco,CA	USA	National Ocean Service	1897-2011	100
552A		Kawaihae,HI	USA	National Ocean Service	1989-2011	90
553A		Port Allen,HI	USA	National Ocean Service	1989-1997	98
554A	159	La Jolla,CA	USA	National Ocean Service	1924-2011	94
555A		Monterey,CA	USA	National Ocean Service	1973-2011	100
556A		Crescent City,CA	USA	National Ocean Service	1933-2011	91
557A		Port Orford,OR	USA	National Ocean Service	1996-2011	80
558A		Neah Bay,WA	USA	National Ocean Service	1934-2011	97
559A	154	Sitka,AK	USA	National Ocean Service	1938-2011	99
560A	150	Seward-A,AK	USA	National Ocean Service	1925-1932	98
560B	150	Seward-B,AK	USA	National Ocean Service	1944-1949	77
560C	150	Seward-C,AK	USA	National Ocean Service	1967-2011	88
561A		Seldovia,AK	USA	National Ocean Service	1975-2011	89
562A		Valdez,AK	USA	National Ocean Service	1973-2011	90
564A		Willapa Bay,WA	USA	National Ocean Service	1972-2011	96
565A		Port San Luis,CA	USA	National Ocean Service	1948-2011	89
567A		Los Angeles,CA	USA	National Ocean Service	1923-2011	99
569A		San Diego,CA	USA	National Ocean Service	1906-2011	97
570A		Yakutat,AK	USA	National Ocean Service	1961-2011	92
571A		Ketchikan,AK	USA	National Ocean Service	1918-2011	75
572A		Astoria,OR	USA	National Ocean Service	1925-2011	98
573A		Arena Cove,CA	USA	National Ocean Service	1996-2011	100
574A	100	Sand Point,AK	USA	National Ocean Service	1973-2011	97
575A		Charleston,OR	USA	National Ocean Service	1978-2011	99
576A		Humboldt Bay,CA	USA	National Ocean Service	1993-2011	99
577A		Santa Barbara,CA	USA	National Ocean Service	1996-2011	53
578A		Santa Monica,CA	USA	National Ocean Service	1973-2011	94
579A	151	Prudhoe Bay,AK	USA	National Ocean Service	1993-2011	100

583A		Cordova-A,AK	USA	National Ocean Service	1949-1953	94
583B		Cordova-B,AK	USA	National Ocean Service	1964-2011	87
584A		Port Angeles,WA	USA	National Ocean Service	1979-2011	71
592A	157	South Beach,OR	USA	National Ocean Service	1967-2011	99
594A		Harvest Oil P.,CA	USA	National Ocean Service	1995-2011	58
595A	74	Nome, AK	USA	National Ocean Service	1992-2011	82
037A		Pago Bay, Guam	USA Trust	National Ocean Service	2004-2011	90
043A		Palmyra	USA Trust	National Ocean Service	1947-1949	95
050A	106	Midway	USA Trust	National Ocean Service	1947-2011	93
051A	105	Wake	USA Trust	National Ocean Service	1950-2011	92
052A	109	Johnston	USA Trust	National Ocean Service	1947-2003	95
053A	149	Guam	USA Trust	National Ocean Service	1948-2010	93
056A	144	Pago Pago	USA Trust	National Ocean Service	1948-2011	96
046A		Port Vila-A	Vanuatu	unconfirmed	1977-1982	87
046B		Port Vila-B	Vanuatu	Nat. Tidal Ctr., BOM	1993-2009	94
381A	75	Qui Nohn	Vietnam	Mar. Hydromet. Center	1994-2009	57
383A		Vung Tau	Vietnam	Mar. Hydromet. Center	1986-2002	97
650A		Hon Dau-A	Vietnam	Mar. Hydromet. Center	1960-1960	100
650B		Hon Dau-B	Vietnam	TEDIPORT	1995-1995	75
651A		Vung Ang	Vietnam	TEDIPORT	1996-1997	100
401A		Apia-A	Western Samoa	Scripps Inst. Ocean.	1954-1971	88
401B		Apia-B	Western Samoa	Nat. Tidal Ctr., BOM	1993-2009	99

Indian Ocean: 98 series with 1,385 site-years; CI: Completeness Index

JASL	GLOSS	STATION	COUNTRY	ORIGINATOR	YEARS	CI
128A	308	Thevenard	Australia	Nat. Tidal Ctr., BOM	1998-2009	99
129A	55	Portland,Vict.	Australia	Nat. Tidal Ctr., BOM	1991-2009	99
130A	278	Casey	Australia	Nat. Tidal Ctr., BOM	1996-2006	90
165A		Wyndham	Australia	Nat. Tidal Ctr., BOM	1984-2005	97
166A	40	Broome	Australia	Nat. Tidal Ctr., BOM	1986-2009	86
167A	52	Carnarvon	Australia	Nat. Tidal Ctr., BOM	1984-2005	82
168A	62	Darwin	Australia	Nat. Tidal Ctr., BOM	1984-2009	98
169A	51	Port Hedland	Australia	Nat. Tidal Ctr., BOM	1984-2005	98
170A	47	Christmas	Australia	Nat. Tidal Ctr., BOM	1986-2009	24
171A	46	Cocos	Australia	Nat. Tidal Ctr., BOM	1985-2009	95
173A	277	Davis	Australia	Nat. Tidal Ctr., BOM	1993-2006	100
175A	53	Fremantle	Australia	Nat. Tidal Ctr., BOM	1984-2009	99
176A	54	Esperance	Australia	Nat. Tidal Ctr., BOM	1985-2009	98
177A	22	Mawson	Australia	Nat. Tidal Ctr., BOM	1992-2006	93
182A		Mina Sulman	Bahrain	Survey Directorate	1979-2007	68
134A		Hiron Point	Bangladesh	BIWTA	1977-2003	99
135A		Khal #10	Bangladesh	BIWTA	1983-1992	62
136A		Cox's Bazaar	Bangladesh	BIWTA	1983-2006	89

137A		Teknaf	Bangladesh	BIWTA	1983-1988	59
138A	36	Charchanga	Bangladesh	BIWTA	1980-2000	97
139A		Khepupara	Bangladesh	BIWTA	1987-2000	96
164A	17	Reunion	France	SHOM	1982-1986	93
178A	21	Crozet-A	France	LEGOS/OMP	1995-1999	52
178B	21	Crozet-B	France	LEGOS/OMP	2000-2001	76
179A	24	Saint Paul	France	LEGOS/OMP	1994-2006	92
180A	23	Kerguelen	France	LEGOS/OMP	1993-2010	99
189A	131	Dumont d'Urville	France	LEGOS/OMP	2008-2010	93
107A	45	Padang-A	Indonesia	BAKOSURTANAL	1986-1998	53
107B	45	Padang-B	Indonesia	BAKOSURTANAL	2005-2007	83
122A		Sibolga-A	Indonesia	BAKOSURTANAL	1989-2004	89
122B		Sibolga-B	Indonesia	BAKOSURTANAL	2005-2008	99
123A	347	Sabang	Indonesia	BAKOSURTANAL	2005-2008	100
125A		Prigi	Indonesia	BAKOSURTANAL	2007-2008	83
133A	68	Ambon-A	Indonesia	BAKOSURTANAL	1992-2004	46
133B	68	Ambon-B	Indonesia	BAKOSURTANAL	2008-2009	99
158A		Meneng	Indonesia	Center for Ocean. Res.	1987-1989	94
159A		Pari	Indonesia	Center for Ocean. Res.	1987-1990	84
160A	292	Surabaya	Indonesia	BAKOSURTANAL	1984-2004	81
161A		Jakarta	Indonesia	BAKOSURTANAL	1984-2004	62
162A	291	Cilacap-A	Indonesia	BAKOSURTANAL	1984-2004	40
162B	291	Cilacap-B	Indonesia	BAKOSURTANAL	2007-2008	100
163A	49	Benoa-A	Indonesia	BAKOSURTANAL	1988-2004	69
163B	49	Benoa-B	Indonesia	BAKOSURTANAL	2006-2007	98
915A	337	Chabahar	Iran	HDNCC	2007-2011	98
127A	95	Syowa	Japan	Japan Ocean. Data Cen.	1987-2007	100
101A	8	Mombasa	Kenya	UH Sea Level Center	1986-2008	73
149A		Lamu-A	Kenya	Kenya Marine Fisheries	1989-1989	68
149B		Lamu-B	Kenya	UH Sea Level Center	1995-2004	100
150A	15	Nosy Be	Madagascar	CNRO	1987-2000	59
140A		Kelang	Malaysia	Dept. Survey/Mapping	1983-2006	97
141A		Keling	Malaysia	Dept. Survey/Mapping	1984-2006	99
142A		Langkawi	Malaysia	Dept. Survey/Mapping	1985-2006	99
143A	43	Lumut	Malaysia	Dept. Survey/Mapping	1984-2006	97
144A		Penang	Malaysia	Dept. Survey/Mapping	1984-2006	97
103A	18	Port Louis-A	Mauritius	Inst. Ocean. Sciences	1942-1947	90
103B	18	Port Louis-B	Mauritius	Inst. Ocean. Sciences	1964-1965	86
103C	18	Port Louis-C	Mauritius	UH Sea Level Center	1986-2008	99
105A	19	Rodrigues	Mauritius	UH Sea Level Center	1986-2003	96
155A	96	Dzaoudzi	Mayotte	SHOM	1985-1995	67
190A		Maputo-A	Mozambique	Inst. Hidro. Marinha	1974-1974	100
190B		Maputo-B	Mozambique	INAHINA	1981-1986	49

191A		Antonio Enes	Mozambique	Inst. Hidro. Marinha	1967-1967	31
192A	11	Pemba-A	Mozambique	Inst. Hidro. Marinha	1971-1973	25
192B	11	Pemba-B	Mozambique	INAHINA	1982-1984	64
192C	11	Pemba-C	Mozambique	INAHINA	2007-2009	98
193A		Nacala-A	Mozambique	Inst. Hidro. Marinha	1975-1975	18
193B		Nacala-B	Mozambique	Inst. Hidro. Marinha	1982-1983	100
907A	37	Akyab (Sittwe)	Myanmar	UH Sea Level Center	2006-2009	99
110A		Muscat	Oman	UH Sea Level Center	1987-1993	77
113A		Masirah	Oman	UH Sea Level Center	1996-2008	79
114A	4	Salalah	Oman	UH Sea Level Center	1989-2009	87
147A	30	Karachi-A	Pakistan	Nat. Inst. of Ocean.	1985-1994	83
147B	30	Karachi-B	Pakistan	PNHD	2007-2011	99
119A	2	Djibouti	Rep. of Djibouti	Port of Djibouti	2007-2011	99
108A	28	Male-A	Rep. of Maldives	Lanka Hydraulic Inst.	1988-1989	100
108B	28	Male-B,Hulule	Rep. of Maldives	UH Sea Level Center	1989-2010	94
109A	27	Gan	Rep. of Maldives	UH Sea Level Center	1987-2009	91
117A		Hanimaadhoo	Rep. of Maldives	UH Sea Level Center	1991-2002	98
106A		Praslin	Seychelles	UH Sea Level Center	1987-1989	89
111A		Port Victoria-A	Seychelles	Inst. Ocean. Sciences	1977-1982	84
111B		Port Victoria-B	Seychelles	UH Sea Level Center	1986-1992	96
121A	339	Pt. La Rue	Seychelles	UH Sea Level Center	1993-2004	98
181A	13	Durban	South Africa	SANHO	1970-2009	65
184A	76	Port Elizabeth	South Africa	SANHO	1973-2010	71
185A		Mossel Bay	South Africa	SANHO	1964-2010	72
186A		Knysna	South Africa	SANHO	1966-2010	62
187A		East London	South Africa	SANHO	1965-2010	56
188A		Richard's Bay	South Africa	SANHO	1977-2010	55
115A	33	Colombo-A	Sri Lanka	Nat. Aquatic Resources	1953-1965	94
115B	33	Colombo-B	Sri Lanka	UH Sea Level Center	1989-1992	96
115C	33	Colombo-C	Sri Lanka	UH Sea Level Center	2006-2010	100
102A		Dar Es Salaam	Tanzania	UH Sea Level Center	1986-1990	87
151A	297	Zanzibar	Tanzania	UH Sea Level Center	1984-2006	100
148A	42	Ko Taphao Noi	Thailand	Naval Hydro. Dept.	1985-2010	97
104B	26	Diego Garcia-B	United Kingdom	Scripps Inst. Ocean.	1969-1969	41
104C	26	Diego Garcia-C	United Kingdom	UH Sea Level Center	1988-2000	80
104D	26	Diego Garcia-D	United Kingdom	UH Sea Level Center	2003-2009	76
172A	3	Aden	Yemen	Port of Aden	2007-2011	94

Atlantic Ocean: 221 series with 5,302 site-years; CI: Completeness Index

JASL	GLOSS	STATION	COUNTRY	ORIGINATOR	YEARS	CI
236A		Luanda	Angola	Inst. Hidro. Marinha	1972-1975	100
237A	262	Lobito	Angola	Inst. Hidro. Marinha	1971-1975	88
238A		Mocamedes	Angola	Inst. Hidro. Marinha	1971-1975	98
285A		Buenos Aires	Argentina	Ser. Hidro. Naval	1905-1961	100
286A	190	Puerto Deseado	Argentina	Ser. Hidro. Naval	1988-1989	87
600A	181	Ushuaia	Argentina	National Ocean Service	1996-2006	78
601A	185	Esperanza	Argentina	National Ocean Service	1996-1998	86
729A	192	Mar Del Plata	Argentina	UH Sea Level Center	2004-2009	98
256A	12	Exuma Cays	Bahamas	HBOI	1992-1993	99
257A	211	Settlement Pnt.-A	Bahamas	National Ocean Service	1985-2002	91
257B	211	Settlement Pnt.-B	Bahamas	National Ocean Service	2002-2003	78
727A		Nassau	Bahamas	National Ocean Service	1904-1905	100
249A		Bridgetown-A	Barbados	National Ocean Service	1968-1970	98
249B		Bridgetown-B	Barbados	Gov. of Barbados	1990-1991	92
249C		Bridgetown-C	Barbados	Gov. of Barbados	1993-1996	45
249D		Bridgetown-D	Barbados	Gov. of Barbados	2008-2010	80
201A	199	St. Peter&Paul R.	Brazil	ORSTOM	1982-1985	99
202A		Natal-A	Brazil	ORSTOM	1982-1983	100
202B		Natal-B	Brazil	ORSTOM	1983-1984	99
202C		Natal-C	Brazil	ORSTOM	1984-1985	100
203A	198	Fer. de Nor.-A	Brazil	ORSTOM	1982-1983	100
203B	198	Fer. de Nor.-B	Brazil	ORSTOM	1984-1985	100
203C	198	Fer. de Nor.-C	Brazil	LPAO/INPE	1985-1986	100
204A	265	Trindade	Brazil	ORSTOM	1983-1983	16
229A		Belem	Brazil	National Ocean Service	1955-1968	96
280A	195	Rio de Janeiro	Brazil	Dir. Hidro. e Navegacao	1963-2010	95
281A	194	Cananeia	Brazil	Inst. Ocean. USP	1954-2006	99
283A	336	Fortaleza-A	Brazil	National Ocean Service	1955-1968	95
283B	336	Fortaleza-B	Brazil	LPAO/INPE	1995-1998	100
284A		Termisa	Brazil	LPAO/INPE	1993-1995	97
707A		Canavieiras	Brazil	National Ocean Service	1956-1961	95
708A	334	Salvador,USCGS	Brazil	National Ocean Service	1955-1964	92
708B	334	Salvador-B	Brazil	UHSLC/DHN/IBGE	2004-2006	96
709A	195	R.Janeiro,USCGS	Brazil	National Ocean Service	1955-1968	70
710A		Suape	Brazil	LPAO/INPE	1982-1984	98
711A		Luis Corriea	Brazil	LPAO/INPE	1984-1985	100
712A		Recife,USCGS	Brazil	National Ocean Service	1955-1968	86
714A	193	Porto Rio Grande	Brazil	Dir. Hidro. e Navegacao	1981-2003	22
715A	200	Madeira	Brazil	Dir. Hidro. e Navegacao	1988-2003	85
716A	201	Santana-A	Brazil	Dir. Hidro. e Navegacao	1970-1972	100
716B	201	Santana-B	Brazil	Dir. Hidro. e Navegacao	1975-1976	100

716C	201	Santana-C	Brazil	Dir. Hidro. e Navegacao	1984-1985	100
716D	201	Santana-D	Brazil	Dir. Hidro. e Navegacao	1996-1997	100
716E	201	Santana-E	Brazil	IBGE	2006-2007	93
717A	201	Santana SSN-A	Brazil	Dir. Hidro. e Navegacao	1994-1995	99
717B	201	Santana SSN-B	Brazil	Dir. Hidro. e Navegacao	1999-2000	99
718A		Imbituba	Brazil	IBGE	2001-2007	79
719A		Macae	Brazil	IBGE	2001-2007	86
781A		Belize	British Honduras	National Ocean Service	1964-1967	84
816A	350	Port Sonara	Cameroon	SNR	2008-2011	83
274A		Churchill	Canada	MEDS	1961-2010	92
275A	222	Halifax	Canada	MEDS	1920-2010	98
276A	223	St. John's-A	Canada	MEDS	1961-1993	96
276B	223	St. John's-B	Canada	MEDS	1993-2006	97
705A		L. Cornwallis I.	Canada	MEDS	1986-1994	100
833A	224	Nain	Canada	MEDS	2001-2006	83
222A		Praia-A	Cape Verde	ORSTOM	1984-1985	100
222C		Praia-C	Cape Verde	National Ocean Service	1995-1996	64
287A		Puerto Williams	Chile	SHOA	1985-1998	88
730A	189	Base Prat	Chile	SHOA	1984-2002	96
265A	207	Cartagena-A	Colombia	IDEAM	1951-1993	90
265B	207	Cartagena-B	Colombia	IDEAM	1993-2011	63
737A		San Andres	Colombia	IDEAM	1997-2011	55
234A	261	Pointe Noire-A	Congo	ORSTOM	1980-1988	77
234B	261	Pointe Noire-B	Congo	PAPN	2008-2011	93
268A		Limon	Costa Rica	SERMAR	1970-1981	66
239A	215	Siboney	Cuba	Inst. Cubano De Hidro.	1990-1990	99
244A	276	Gibara	Cuba	Inst. Cubano De Hidro.	1985-1992	100
251A		Guantanamo Bay-A	Cuba	National Ocean Service	1937-1948	81
251B		Guantanamo Bay-B	Cuba	National Ocean Service	1995-1997	89
296A		Sisimiut	Denmark	Danish Navig./Hydro.	1991-1998	85
297A	228	Ammassalik	Denmark	Danish Navig./Hydro.	1990-1998	78
298A		Ilulissat	Denmark	Danish Navig./Hydro.	1992-1997	82
299A	344	Qaqortoq	Denmark	Danish Navig./Hydro.	1991-1998	83
807A	349	Alexandria	Egypt	NIOF	2009-2011	94
227A	202	Cayenne	France	SHOM	2006-2007	67
270A	204	Le Robert	France	SHOM	1976-1984	61
271A	338	Fort de France	France	SHOM	1976-2007	17
272A		Pointe-a-Pitre	France	Meteo-France	1991-1998	96
822A	242	Brest	France	SHOM	1846-2007	91
824A	205	Marseille	France	SHOM	1985-2007	48
825A	284	Cuxhaven	Germany	BFG	1917-1987	100
231A	335	Takoradi-A	Ghana	ORSTOM	1983-1986	100
231B	335	Takoradi-B	Ghana	NIO,India	2004-2005	100

231C	335	Takoradi-C	Ghana	Survey of Ghana	2007-2009	77
269A		Cochino Pequeno	Honduras	National Ocean Service	1995-1996	100
780A		Puerto Cortes-A	Honduras	National Ocean Service	1948-1968	99
780B		Puerto Cortes-B	Honduras	National Ocean Service	2001-2002	100
784A		Puerto Castilla	Honduras	National Ocean Service	1955-1967	78
288A	229	Reykjavik	Iceland	Iceland Hydro. Serv.	1984-1999	94
834A	239	Malin Head	Ireland	QUB	1958-2001	95
835A		Castletownsend	Ireland	J.Murphy HMRC	2004-2008	87
230A	257	Abidjan-Vridi	Ivory Coast	ORSTOM	1982-1988	100
782A	210	Port Royal	Jamaica	National Ocean Service	1965-1971	99
806A		Nouakchott	Mauritania	PAN	2007-2011	90
250A	212	Veracruz-A,Ver.	Mexico	UNAM	1985-2008	54
250B	212	Veracruz-B,Ver.	Mexico	Secretaria de Marina	1999-2004	63
277A		Madero,Tampico	Mexico	National Ocean Service	2004-2007	89
721A	213	Progreso-A, Yuc.	Mexico	UNAM	1980-1984	98
721B	213	Progreso-B, Yuc.	Mexico	Secretaria de Marina	1999-2004	63
779A		C.Carmen	Mexico	UNAM	1957-1979	57
220A	314	Walvis Bay	Namibia	SANHO	1959-1998	49
724A		Puerto Cabezas	Nicaragua	National Ocean Service	2001-2002	100
233A	259	Lagos-A	Nigeria	POL	1961-1969	63
233C	259	Lagos-C	Nigeria	NIOMR	1992-1996	74
800A	322	Andenes	Norway	NHS	1991-2003	99
803A	234	Rorvik	Norway	NHS	1969-2003	96
804A	321	Tregde	Norway	NHS	1927-2003	94
805A	323	Vardo	Norway	NHS	1947-2003	60
823A	345	Ny-Alesund	Norway	NHS	1976-2003	89
266A	208	Cristobal	Panama	Autoridad Canal Panama	1907-2010	92
209A	246	Cascais	Portugal	Inst. Geogr. Port.	1959-2005	88
210A	244	Flores,Azores	Portugal	Inst. Hidro. Marinha	1976-2009	58
211A	245	Ponta Delgada	Portugal	Inst. Hidro. Marinha	1978-2007	68
212A		Horta,Azores	Portugal	Inst. Hidro. Marinha	1984-1986	87
215A		Angra Heroismo-A	Portugal	Inst. Hidro. Marinha	1957-1962	100
215B		Angra Heroismo-B	Portugal	Inst. Hidro. Marinha	1976-1983	94
216A	254	Porto Grande	Portugal	Inst. Hidro. Marinha	1990-1993	38
218B	250	Funchal-B	Portugal	Inst. Hidro. Marinha	1976-2009	75
235A	329	Palmeira,C.Verde	Portugal	UH Sea Level Center	2000-2010	87
723A		Lagos, Algarve	Portugal	Inst. Geogr. Port.	1986-2000	72
225A	260	Sao Tome	Sao Tome/Principe	ORSTOM	1985-1988	58
223A	253	Dakar-A	Senegal	ORSTOM	1982-1983	100
223B	253	Dakar-B	Senegal	ORSTOM	1983-1985	100
223C	253	Dakar-C	Senegal	ORSTOM	1986-1986	44
223D	253	Dakar-D	Senegal	ORSTOM	1986-1989	94
223E	253	Dakar-E	Senegal	UH Sea Level Center	1996-2009	64

221A	268	Simon's Town	South Africa	SANHO	1959-2009	80
701A		Port Nolloth	South Africa	SANHO	1958-2010	76
702A		Luderitz	South Africa	SANHO	1958-2010	66
703A		Saldahna Bay	South Africa	SANHO	1973-2010	72
704A		Cape Town	South Africa	SANHO	1967-2009	75
205A		Arrecife-A	Spain	Inst. Espanol Ocean.	1959-1973	98
205B		Arrecife-B	Spain	Inst. Espanol Ocean.	1973-1985	69
205D		Arrecife-D	Spain	Inst. Espanol Ocean.	1987-1991	90
206A		S.Cruz Palma-A	Spain	Inst. Espanol Ocean.	1949-1959	100
206B		S.Cruz Palma-B	Spain	Inst. Espanol Ocean.	1959-1981	93
206D		S.Cruz Palma-D	Spain	Inst. Espanol Ocean.	1989-1990	93
207A	249	Ceuta	Spain	Inst. Espanol Ocean.	1944-2008	96
208A		Vigo	Spain	Inst. Espanol Ocean.	1943-1990	100
217A	251	Las Palmas-A	Spain	Inst. Espanol Ocean.	1949-1956	95
217B	251	Las Palmas-B	Spain	Inst. Espanol Ocean.	1971-1982	88
217C	251	Las Palmas-C	Spain	Inst. Espanol Ocean.	1983-1991	73
217D	251	Las Palmas-D	Spain	Inst. Espanol Ocean.	1991-2008	100
228A		Tenerife	Spain	Puertos del Estado	1992-2009	94
830A	243	La Coruna	Spain	Inst. Espanol Ocean.	1943-2008	97
819A	233	Goteborg-Torsh.	Sweden	SMHI	1967-2006	100
826A	341	Stockholm	Sweden	SMHI	1889-2007	99
248A	203	Port-of-Spain	Trinidad/Tobago	Trin/Tob. Hydro. Unit	1984-1992	81
728A		Point Fortin	Trinidad/Tobago	Trin/Tob. Hydro. Unit	1987-1996	61
259A	221	Bermuda-A	United Kingdom	National Ocean Service	1932-1949	78
259B	221	Bermuda-B	United Kingdom	National Ocean Service	1985-2011	82
289A	248	Gibraltar	United Kingdom	Hidrographic Office	1961-2000	69
290A	305	Port Stanley-A	United Kingdom	POL	1964-1974	47
290B	305	Port Stanley-B	United Kingdom	POL	1992-2009	91
291A	263	Ascension	United Kingdom	POL	1993-2009	64
292A	264	St. Helena	United Kingdom	POL	1993-2006	75
293A	236	Lerwick	United Kingdom	POL	1959-2010	95
294A	241	Newlyn	United Kingdom	POL	1915-2010	98
295A	238	Stornoway	United Kingdom	POL	1976-2010	83
700A	188	Faraday	United Kingdom	POL	1959-2009	73
720A		South Caicos	United Kingdom	NOAA/AOML	1992-1992	76
832A	342	Rothera	United Kingdom	POL	2002-2009	66
214A		Lameshur Bay,VI	USA	National Ocean Service	2006-2011	99
219A		Culebra,PR	USA	National Ocean Service	2005-2011	93
240A		Fernandina Beach	USA	National Ocean Service	1897-2011	45
241A		Miami,Haulover P.	USA	National Ocean Service	1985-1992	96
242A	216	Key West	USA	National Ocean Service	1913-2011	98
243A		Penuelas, PR	USA	National Ocean Service	2001-2005	100
245A	206	San Juan	USA	National Ocean Service	1977-2011	95

246A	Magueyes Island	USA	National Ocean Service	1965-2011	97	
252A	Portland,ME	USA	National Ocean Service	1910-2011	97	
253A	290	Newport,RI	USA	National Ocean Service	1930-2011	96
254A		Limetree Bay	USA	National Ocean Service	1982-2011	92
255A		Charlotte Amalie	USA	National Ocean Service	1978-2011	89
258A		Christiansted,VI	USA	National Ocean Service	2006-2011	98
260A	219	Duck Pier,NC	USA	National Ocean Service	1978-2011	99
261A		Charleston,SC	USA	National Ocean Service	1921-2011	98
262A		St. Augustine,FL	USA	National Ocean Service	1978-2002	42
263A		Aguadilla,PR	USA	National Ocean Service	2006-2011	86
264A	220	Atlantic City,NJ	USA	National Ocean Service	1911-2011	94
267A		Mona Is.,PR	USA	National Ocean Service	2006-2011	88
279A		Montauk	USA	National Ocean Service	1959-2011	89
732A		Isabel Segunda,PR	USA	National Ocean Service	2009-2011	100
733A		Esperanza,PR	USA	National Ocean Service	2005-2011	92
734A		Yabucoa,PR	USA	National Ocean Service	2008-2011	94
735A		Arecibo,PR	USA	National Ocean Service	2008-2011	100
736A		Mayaguez,PR	USA	National Ocean Service	2008-2011	100
740A		Eastport,ME	USA	National Ocean Service	1929-2011	94
741A		Boston,MA	USA	National Ocean Service	1921-2011	99
742A		Woods Hole,MA	USA	National Ocean Service	1957-2011	90
743A		Nantucket,MA	USA	National Ocean Service	1965-2011	96
744A		New London,CT	USA	National Ocean Service	1938-2011	95
745A		New York,NY	USA	National Ocean Service	1958-2011	87
746A		Cape May,NJ	USA	National Ocean Service	1965-2011	89
747A		Lewes,DE	USA	National Ocean Service	1957-2011	97
749A		Chesapeake BBT,VA	USA	National Ocean Service	1975-2011	99
750A		Wilmington,NC	USA	National Ocean Service	1935-2011	98
752A	289	Fort Pulaski,GA	USA	National Ocean Service	1935-2011	95
753A		Mayport,FL	USA	National Ocean Service	1928-2000	99
754A		Cocoa Beach,FL	USA	National Ocean Service	1994-1996	98
755A	332	Virginia Key,FL	USA	National Ocean Service	1996-2011	99
757A		Naples,FL	USA	National Ocean Service	1996-2011	95
759A		St. Petersburg,FL	USA	National Ocean Service	1946-2011	96
760A		Apalachicola,FL	USA	National Ocean Service	1996-2011	97
761A		Panama City Bh,FL	USA	National Ocean Service	1993-2008	97
762A	288	Pensacola,FL	USA	National Ocean Service	1923-2011	96
763A		Dauphin Island AL	USA	National Ocean Service	1996-2011	70
764A		South Pass,LA	USA	National Ocean Service	1993-1999	90
765A		Grand Isle,LA	USA	National Ocean Service	1980-2011	97
766A		Sabine Pass N, TX	USA	National Ocean Service	1992-2011	98
767A		Galveston,P.Pier	USA	National Ocean Service	1957-2011	97
769A		Rockport,TX	USA	National Ocean Service	1987-2011	100

770A		Corpus Cristi,TX	USA	National Ocean Service	1988-2011	99
772A		Port Isabel,TX	USA	National Ocean Service	1977-2011	97
773A		Clearwater Bch,FL	USA	National Ocean Service	1996-2011	96
774A		Port Canaveral,FL	USA	National Ocean Service	1994-2011	98
775A	217	Galveston,Pier21	USA	National Ocean Service	1904-2011	96
783A		Fajardo-A,PR	USA	National Ocean Service	1921-1923	95
783B		Fajardo-B,PR	USA	National Ocean Service	2008-2011	100
247A	328	La Guaira	Venezuela	Inst. Ocean. Venezuela	1985-1994	97

A.2 New Series Relative to May 2009

Number of new series: 50; CI: Completeness Index

JASL	GLOSS	STATION	COUNTRY	ORIGINATOR	YEARS	CI
001C	115	Pohnpei-C	Fd St Micronesia	Nat. Tidal Ctr., BOM	2001-2009	100
037A		Pago Bay, Guam	USA Trust	National Ocean Service	2004-2011	90
045A		Jarvis	USA	UH Sea Level Center	1957-1957	27
082B	182	Acajutla-B	El Salvador	Inst. Geograf. Naciona	2001-2009	52
086B		La Union-B	El Salvador	Inst. Geograf. Naciona	2001-2010	74
089B		Manta-B	Ecuador	INOCAR	1990-2008	82
096B		San Juan-B	Peru	DHNM	2003-2010	94
098A		Esmeraldas	Ecuador	INOCAR	1990-2010	92
330A		Rosslyn Bay	Australia	Nat. Tidal Ctr., BOM	1993-2009	100
372B	71	Davao-B	Philippines	Ocean. Surveys Div.	1998-2008	54
584A		Port Angeles,WA	USA	National Ocean Service	1979-2011	71
665A		Timaru	New Zealand	LINZ	1987-2010	57
667A		Lyttelton	New Zealand	LINZ	1995-2010	97
668A		Napier	New Zealand	LINZ	1989-2010	80
669A		Port Chalmers	New Zealand	LINZ	1985-2010	60
679B		Corinto-B	Nicaragua	National Ocean Service	2001-2001	50
104D	26	Diego Garcia-D	United Kingdom	UH Sea Level Center	2003-2009	76
115C	33	Colombo-C	Sri Lanka	UH Sea Level Center	2006-2010	100
119A	2	Djibouti	Rep. of Djibouti	Port of Djibouti	2007-2011	99
133B	68	Ambon-B	Indonesia	BAKOSURTANAL	2008-2009	99
147B	30	Karachi-B	Pakistan	PNHD	2007-2011	99
172A	3	Aden	Yemen	Port of Aden	2007-2011	94
178B	21	Crozet-B	France	LEGOS/OMP	2000-2001	76
189A	131	Dumont d'Urville	France	LEGOS/OMP	2008-2010	93
192C	11	Pemba-C	Mozambique	INAHINA	2007-2009	98
907A	37	Akyab (Sittwe)	Myanmar	UH Sea Level Center	2006-2009	99
915A	337	Chabahar	Iran	HDNCC	2007-2011	98
231B	335	Takoradi-B	Ghana	NIO,India	2004-2005	100
231C	335	Takoradi-C	Ghana	Survey of Ghana	2007-2009	77
234B	261	Pointe Noire-B	Congo	PAPN	2008-2011	93

249D	Bridgetown-D	Barbados	Gov. of Barbados	2008-2010	80
723A	Lagos, Algarve	Portugal	Inst. Geogr. Port.	1986-2000	72
724A	Puerto Cabezas	Nicaragua	National Ocean Service	2001-2002	100
729A 192	Mar Del Plata	Argentina	UH Sea Level Center	2004-2009	98
732A	Isabel Segunda,PR	USA	National Ocean Service	2009-2011	100
733A	Esperanza,PR	USA	National Ocean Service	2005-2011	92
734A	Yabucoa,PR	USA	National Ocean Service	2008-2011	94
735A	Arecibo,PR	USA	National Ocean Service	2008-2011	100
736A	Mayaguez,PR	USA	National Ocean Service	2008-2011	100
737A	San Andres	Colombia	IDEAM	1997-2011	55
783B	Fajardo-B,PR	USA	National Ocean Service	2008-2011	100
800A 322	Andenes	Norway	NHS	1991-2003	99
803A 234	Rorvik	Norway	NHS	1969-2003	96
804A 321	Tregde	Norway	NHS	1927-2003	94
805A 323	Vardo	Norway	NHS	1947-2003	60
806A	Nouakchott	Mauritania	PAN	2007-2011	90
807A 349	Alexandria	Egypt	NIOF	2009-2011	94
816A 350	Port Sonara	Cameroon	SNR	2008-2011	83
823A 345	Ny-Alesund	Norway	NHS	1976-2003	89
834A 239	Malin Head	Ireland	QUB	1958-2001	95

A.3 Series with Updated Years Relative to May 2009

Number of updated series: 225

Number of updated years: 1,198

JASL	STATION	STATUS 2009	STATUS 2011	YEARS ADDED	ORIGINATOR
002D	Tarawa-D,Betio	1992-2007	1992-2009	2	Nat. Tidal Ctr., BOM
003B	Baltra-B	1985-2005	1985-2010	5	UH Sea Level Center
004B	Nauru-B	1993-2007	1993-2009	2	Nat. Tidal Ctr., BOM
005B	Majuro-B	1993-2007	1993-2009	2	Nat. Tidal Ctr., BOM
007B	Malakal-B	1969-2003	1969-2009	6	UH Sea Level Center
008B	Yap-B	1969-2004	1969-2005	1	UH Sea Level Center
009B	Honiara-B	1994-2007	1994-2009	2	Nat. Tidal Ctr., BOM
013B	Kanton-B	1972-2001	1972-2007	6	UH Sea Level Center
014A	French Frigate S	1974-2001	1974-2004	3	UH Sea Level Center
015B	Papeete-B	1975-2002	1975-2009	7	National Ocean Service
018B	Suva-B	1998-2007	1998-2009	2	Nat. Tidal Ctr., BOM
021B	Juan Fernandez-B	1985-2006	1985-2010	4	SHOA
022C	Easter-C	1970-2006	1970-2010	4	SHOA
023B	Rarotonga-B	1993-2007	1993-2009	2	Nat. Tidal Ctr., BOM
024A	Penrhyn	1977-2006	1977-2010	4	UH Sea Level Center
025B	Funafuti-B	1993-2007	1993-2009	2	Nat. Tidal Ctr., BOM
028B	Saipan-B	1978-2005	1978-2009	4	UH Sea Level Center

029A	Kapingamarangi	1978-2003	1978-2008	5	UH Sea Level Center
030A	Santa Cruz	1978-2004	1978-2007	3	UH Sea Level Center
033A	Bitung	1986-2001	1986-2009	8	BAKOSURTANAL
035A	San Felix	1987-2006	1987-2010	4	SHOA
038A	Nuku'alofa	1990-2007	1990-2009	2	Nat. Tidal Ctr., BOM
039A	Kodiak,Alaska	1975-2008	1975-2010	2	National Ocean Service
040A	Adak,Alaska	1950-2008	1950-2011	3	National Ocean Service
041B	Dutch Harbor-B,AK	1982-2008	1982-2011	3	National Ocean Service
046B	Port Vila-B	1993-2007	1993-2009	2	Nat. Tidal Ctr., BOM
047A	Chichijima	1975-2005	1975-2010	5	Japan Meteor. Agency
049A	Minamitorishima	1997-2005	1997-2010	5	Japan Meteor. Agency
050A	Midway	1947-2008	1947-2011	3	National Ocean Service
051A	Wake	1950-2008	1950-2011	3	National Ocean Service
053A	Guam	1948-2008	1948-2010	2	National Ocean Service
055A	Kwajalein	1946-2008	1946-2011	3	National Ocean Service
056A	Pago Pago	1948-2008	1948-2011	3	National Ocean Service
057B	Honolulu-B	1905-2008	1905-2011	3	National Ocean Service
058A	Nawiliwili	1954-2008	1954-2011	3	National Ocean Service
059A	Kahului	1950-2008	1950-2011	3	National Ocean Service
060A	Hilo	1927-2008	1927-2011	3	National Ocean Service
061A	Mokuoloe	1957-2008	1957-2011	3	National Ocean Service
071A	Wellington	1944-2005	1944-2010	5	LINZ
072A	Bluff	1984-2005	1984-2010	5	LINZ
073A	Tauranga	1984-2008	1984-2010	2	LINZ
076A	Taranaki	1984-1985	1984-2010	25	LINZ
077A	Port Nelson	1984-1985	1984-2010	25	LINZ
079A	Chatham	2001-2003	2001-2010	7	UH Sea Level Center
080A	Antofagasta	1945-2006	1945-2010	4	SHOA
081A	Valparaiso	1944-2006	1944-2010	4	SHOA
082A	Acajutla	1971-2001	1962-2001	9	Inst. Geograf. Nacional
084A	Lobos de Afuera	1982-2008	1982-2009	1	DHNM
085A	Buenaventura	1953-2000	1953-2011	11	IDEAM
091A	La Libertad	1949-2008	1949-2010	2	INOCAR
092B	Talara-B	1988-2008	1988-2010	2	DHNM
093B	Callao-B	1970-2008	1970-2010	2	DHNM
094B	Matarani-B	1992-2008	1992-2010	2	DHNM
096A	San Juan	1978-2002	1978-2003	1	DHNM
302A	Balboa	1907-1997	1907-2010	13	Autoridad Canal Panama
303A	Tumaco	1951-2000	1951-2011	11	IDEAM
328A	Ko Lak	1985-2008	1985-2010	2	Naval Hydro. Dept.
329B	Hong Kong-B	1986-2008	1986-2010	2	Hong Kong Observatory
331A	Brisbane	1984-2007	1984-2009	2	Nat. Tidal Ctr., BOM
332A	Bundaberg	1984-2007	1984-2009	2	Nat. Tidal Ctr., BOM

333A	Fort Denison	1965-2007	1965-2009	2	Nat. Tidal Ctr., BOM
334A	Townsville	1984-2007	1984-2009	2	Nat. Tidal Ctr., BOM
335A	Spring Bay	1985-2007	1985-2009	2	Nat. Tidal Ctr., BOM
336A	Booby Island	1988-2007	1988-2009	2	Nat. Tidal Ctr., BOM
340A	Kaohsiung	1980-2008	1980-2010	2	Central Weather Bureau
341A	Keelung	1980-2008	1980-2010	2	Central Weather Bureau
345A	Nakano Shima	1984-2007	1984-2010	3	Japan Ocean. Data Cen.
347A	Abashiri	1968-2005	1968-2010	5	Japan Meteor. Agency
348A	Hamada	1984-2005	1984-2010	5	Japan Meteor. Agency
349A	Toyama	1967-2005	1967-2010	5	Japan Meteor. Agency
350A	Kushiro	1963-2005	1963-2010	5	Japan Meteor. Agency
351A	Ofunato	1965-2005	1965-2010	5	Japan Meteor. Agency
352A	Mera	1965-2005	1965-2010	5	Japan Meteor. Agency
353A	Kushimoto	1961-2005	1961-2010	5	Japan Meteor. Agency
354A	Aburatsu	1961-2005	1961-2010	5	Japan Meteor. Agency
355A	Naha	1966-2005	1966-2010	5	Japan Meteor. Agency
356A	Maisaka	1968-2005	1968-2010	5	Japan Meteor. Agency
357A	Miyakejima	1964-2003	1964-2010	7	Japan Ocean. Data Cen.
359A	Naze	1957-2007	1957-2010	3	Japan Ocean. Data Cen.
360A	Wakkai	1967-2005	1967-2010	5	Japan Meteor. Agency
362A	Nagasaki	1985-2005	1985-2010	5	Japan Meteor. Agency
363A	Nishinoomote	1965-2007	1965-2010	3	Japan Ocean. Data Cen.
364A	Hakodate	1964-2005	1964-2010	5	Japan Meteor. Agency
365A	Ishigaki	1969-2005	1969-2010	5	Japan Meteor. Agency
370A	Manila	1984-2002	1984-2008	6	Ocean. Surveys Div.
371A	Legaspi	1984-2004	1984-2007	3	Ocean. Surveys Div.
375A	Hachinohe	1980-2005	1980-2010	5	Japan Meteor. Agency
379A	Cebu	1998-2004	1998-2008	4	Ocean. Surveys Div.
380A	Puerto Princesa	1998-2002	1998-2007	5	Ocean. Surveys Div.
381A	Qui Nohn	1994-2005	1994-2009	4	Mar. Hydromet. Center
395B	Manzanillo-B	1992-2001	1992-2003	2	National Ocean Service
398A	Marsden Point	1984-1985	1975-2010	34	LINZ
400A	Lombrum	1994-2007	1994-2009	2	Nat. Tidal Ctr., BOM
401B	Apia-B	1993-2007	1993-2009	2	Nat. Tidal Ctr., BOM
402A	Lautoka	1992-2007	1992-2009	2	Nat. Tidal Ctr., BOM
403A	Jackson	1999-2007	1999-2009	2	Nat. Tidal Ctr., BOM
540B	Prince Rupert-B	1963-2006	1963-2010	4	MEDS
542A	Tofino	1963-2006	1963-2010	4	MEDS
543A	Victoria,BC	1909-1964	1909-2007	43	MEDS
551A	San Francisco,CA	1901-2008	1897-2011	7	National Ocean Service
552A	Kawaihae,HI	1989-2008	1989-2011	3	National Ocean Service
554A	La Jolla,CA	1925-2008	1924-2011	4	National Ocean Service
555A	Monterey,CA	1973-2008	1973-2011	3	National Ocean Service

556A	Crescent City,CA	1933-2008	1933-2011	3	National Ocean Service
557A	Port Orford,OR	1996-2008	1996-2011	3	National Ocean Service
558A	Neah Bay,WA	1934-2008	1934-2011	3	National Ocean Service
559A	Sitka,AK	1938-2008	1938-2011	3	National Ocean Service
560C	Seward-C,AK	1967-2008	1967-2011	3	National Ocean Service
561A	Seldovia,AK	1975-2008	1975-2011	3	National Ocean Service
562A	Valdez,AK	1973-2008	1973-2011	3	National Ocean Service
564A	Willapa Bay,WA	1996-2008	1972-2011	27	National Ocean Service
565A	Port San Luis,CA	1983-2008	1948-2011	38	National Ocean Service
567A	Los Angeles,CA	1923-2008	1923-2011	3	National Ocean Service
569A	San Diego,CA	1906-2008	1906-2011	3	National Ocean Service
570A	Yakutat,AK	1961-2008	1961-2011	3	National Ocean Service
571A	Ketchikan,AK	1918-2008	1918-2011	3	National Ocean Service
572A	Astoria,OR	1925-2008	1925-2011	3	National Ocean Service
573A	Arena Cove,CA	1996-2008	1996-2011	3	National Ocean Service
574A	Sand Point,AK	1973-2008	1973-2011	3	National Ocean Service
575A	Charleston,OR	1978-2008	1978-2011	3	National Ocean Service
576A	Humboldt Bay,CA	1993-2008	1993-2011	3	National Ocean Service
577A	Santa Barbara,CA	1996-2008	1996-2011	3	National Ocean Service
578A	Santa Monica,CA	1995-2008	1973-2011	25	National Ocean Service
579A	Prudhoe Bay,AK	1993-2008	1993-2011	3	National Ocean Service
583B	Cordova-B,AK	1964-2008	1964-2011	3	National Ocean Service
592A	South Beach,OR	1967-2008	1967-2011	3	National Ocean Service
594A	Harvest Oil P.,CA	1995-1999	1995-2011	12	National Ocean Service
595A	Nome, AK	1992-2008	1992-2011	3	National Ocean Service
678B	Paita-B	1988-2008	1988-2009	1	DHNM
683B	Pisco-B	1991-2007	1991-2010	3	DHNM
684A	Puerto Montt	1980-2006	1980-2010	4	SHOA
699A	Tanjong Pagar	1988-2008	1988-2010	2	Port Singapore Auth.
101A	Mombasa	1986-2001	1986-2008	7	UH Sea Level Center
108B	Male-B,Hulule	1989-2003	1989-2010	7	UH Sea Level Center
109A	Gan	1987-2003	1987-2009	6	UH Sea Level Center
113A	Masirah	1996-2003	1996-2008	5	UH Sea Level Center
114A	Salalah	1989-2003	1989-2009	6	UH Sea Level Center
127A	Syowa	1987-2002	1987-2007	5	Japan Ocean. Data Cen.
128A	Thevenard	1998-2007	1998-2009	2	Nat. Tidal Ctr., BOM
129A	Portland,Vict.	1991-2007	1991-2009	2	Nat. Tidal Ctr., BOM
148A	Ko Taphao Noi	1985-2008	1985-2010	2	Naval Hydro. Dept.
150A	Nosy Be	1987-1998	1987-2000	2	CNRO
166A	Broome	1986-2007	1986-2009	2	Nat. Tidal Ctr., BOM
168A	Darwin	1984-2007	1984-2009	2	Nat. Tidal Ctr., BOM
170A	Christmas	1986-1993	1986-2009	16	Nat. Tidal Ctr., BOM
171A	Cocos	1985-2007	1985-2009	2	Nat. Tidal Ctr., BOM

175A	Fremantle	1984-2007	1984-2009	2	Nat. Tidal Ctr., BOM
176A	Esperance	1985-2007	1985-2009	2	Nat. Tidal Ctr., BOM
179A	Saint Paul	1994-2000	1994-2006	6	LEGOS/OMP
180A	Kerguelen	1993-1998	1993-2010	12	LEGOS/OMP
181A	Durban	1970-2007	1970-2009	2	SANHO
184A	Port Elizabeth	1973-2007	1973-2010	3	SANHO
185A	Mossel Bay	1964-2007	1964-2010	3	SANHO
186A	Knysna	1966-2007	1966-2010	3	SANHO
187A	East London	1965-2007	1965-2010	3	SANHO
188A	Richard's Bay	1977-2007	1977-2010	3	SANHO
209A	Cascais	1959-2000	1959-2005	5	Inst. Geogr. Port.
210A	Flores,Azores	1976-1996	1976-2009	13	Inst. Hidro. Marinha
214A	Lameshur Bay,VI	2006-2008	2006-2011	3	National Ocean Service
218B	Funchal-B	1976-2006	1976-2009	3	Inst. Hidro. Marinha
219A	Culebra,PR	2005-2008	2005-2011	3	National Ocean Service
221A	Simon's Town	1959-2007	1959-2009	2	SANHO
223E	Dakar-E	1996-2003	1996-2009	6	UH Sea Level Center
228A	Tenerife	1992-2003	1992-2009	6	Puertos del Estado
235A	Palmeira,C.Verde	2000-2001	2000-2010	9	UH Sea Level Center
240A	Fernandina Beach	1985-2008	1897-2011	91	National Ocean Service
242A	Key West	1913-2008	1913-2011	3	National Ocean Service
245A	San Juan	1985-2008	1977-2011	11	National Ocean Service
246A	Magueyes Island	1965-2008	1965-2011	3	National Ocean Service
250A	Veracruz-A,Ver.	1985-1995	1985-2008	13	UNAM
252A	Portland,ME	1910-2008	1910-2011	3	National Ocean Service
253A	Newport,RI	1930-2008	1930-2011	3	National Ocean Service
254A	Limetree Bay	1982-2008	1982-2011	3	National Ocean Service
255A	Charlotte Amalie	1978-2008	1978-2011	3	National Ocean Service
258A	Christiansted,VI	2006-2008	2006-2011	3	National Ocean Service
259B	Bermuda-B	1985-2008	1985-2011	3	National Ocean Service
260A	Duck Pier,NC	1978-2008	1978-2011	3	National Ocean Service
261A	Charleston,SC	1921-2008	1921-2011	3	National Ocean Service
263A	Aguadilla,PR	2006-2008	2006-2011	3	National Ocean Service
264A	Atlantic City,NJ	1911-2008	1911-2011	3	National Ocean Service
265B	Cartagena-B	1993-2000	1993-2011	11	IDEAM
266A	Cristobal	1907-1997	1907-2010	13	Autoridad Canal Panama
267A	Mona Is.,PR	2006-2008	2006-2011	3	National Ocean Service
274A	Churchill	1961-2000	1961-2010	10	MEDS
275A	Halifax	1920-2006	1920-2010	4	MEDS
279A	Montauk	1959-2008	1959-2011	3	National Ocean Service
280A	Rio de Janeiro	1963-2008	1963-2010	2	Dir. Hidro. e Navegacao
290B	Port Stanley-B	1992-2008	1992-2009	1	POL

291A	Ascension	1993-2001	1993-2009	8	POL
293A	Lerwick	1959-2007	1959-2010	3	POL
294A	Newlyn	1915-2007	1915-2010	3	POL
295A	Stornoway	1976-2007	1976-2010	3	POL
600A	Ushuaia	1996-2003	1996-2006	3	National Ocean Service
700A	Faraday	1984-2004	1959-2009	30	POL
701A	Port Nolloth	1958-2007	1958-2010	3	SANHO
702A	Luderitz	1958-1998	1958-2010	12	SANHO
703A	Saldahna Bay	1973-2007	1973-2010	3	SANHO
704A	Cape Town	1967-2007	1967-2009	2	SANHO
740A	Eastport,ME	1929-2008	1929-2011	3	National Ocean Service
741A	Boston,MA	1921-2008	1921-2011	3	National Ocean Service
742A	Woods Hole,MA	1957-2008	1957-2011	3	National Ocean Service
743A	Nantucket,MA	1965-2008	1965-2011	3	National Ocean Service
744A	New London,CT	1938-2008	1938-2011	3	National Ocean Service
745A	New York,NY	1958-2008	1958-2011	3	National Ocean Service
746A	Cape May,NJ	1965-2008	1965-2011	3	National Ocean Service
747A	Lewes,DE	1957-2008	1957-2011	3	National Ocean Service
749A	Chesapeake BBT,VA	1975-2008	1975-2011	3	National Ocean Service
750A	Wilmington,NC	1935-2008	1935-2011	3	National Ocean Service
752A	Fort Pulaski,GA	1935-2008	1935-2011	3	National Ocean Service
755A	Virginia Key,FL	1996-2008	1996-2011	3	National Ocean Service
757A	Naples,FL	1996-2008	1996-2011	3	National Ocean Service
759A	St. Petersburg,FL	1946-2008	1946-2011	3	National Ocean Service
760A	Apalachicola,FL	1996-2008	1996-2011	3	National Ocean Service
762A	Pensacola,FL	1923-2008	1923-2011	3	National Ocean Service
763A	Dauphin Island AL	1996-2008	1996-2011	3	National Ocean Service
765A	Grand Isle,LA	1980-2008	1980-2011	3	National Ocean Service
766A	Sabine Pass N, TX	1992-2008	1992-2011	3	National Ocean Service
767A	Galveston,P.Pier	1957-2008	1957-2011	3	National Ocean Service
769A	Rockport,TX	1987-2008	1987-2011	3	National Ocean Service
770A	Corpus Cristi,TX	1992-1999	1988-2011	16	National Ocean Service
772A	Port Isabel,TX	1977-2008	1977-2011	3	National Ocean Service
773A	Clearwater Bch,FL	1996-2008	1996-2011	3	National Ocean Service
774A	Port Canaveral,FL	1994-2008	1994-2011	3	National Ocean Service
775A	Galveston,Pier21	1904-2008	1904-2011	3	National Ocean Service
832A	Rothera	2002-2005	2002-2009	4	POL

A.4 Series Extended Backwards

Total number of years (NY) extended backwards = 229

JASL	GLOSS	STATION	COUNTRY	ORIGINATOR	YEARS	NY
082A	182	Acajutla-A	El Salvador	Inst. Geograf. Nacional	1962-2001	9
398A		Marsden Point	New Zealand	Land Info. New Zealand	1975-2010	9
551A	158	San Francisco,CA	USA	National Ocean Service	1897-2011	4
554A	159	La Jolla,CA	USA	National Ocean Service	1924-2011	1
564A		Willapa Bay,WA	USA	National Ocean Service*	1972-2011	24
565A		Port San Luis,CA	USA	National Ocean Service*	1948-2011	35
578A		Santa Monica,CA	USA	National Ocean Service*	1973-2011	22
240A		Fernandina Beach	USA	National Ocean Service	1897-2011	88
245A	206	San Juan	USA	National Ocean Service	1977-2011	8
700A	188	Faraday	United Kingdom	Proudman Ocean. Lab.	1959-2009	25
770A		Corpus Cristi,TX	USA	National Ocean Service	1988-2011	4

*Digitized by Drs. S.Talke and D.Jay, Portland State University

A.5 Series with Year 2009

Number of series with 2009: 240; CI: Completeness Index

JASL	GLOSS	STATION	COUNTRY	ORIGINATOR	YEARS	CI
001C	115	Pohnpei-C	Fd St Micronesia	Nat. Tidal Ctr., BOM	2001-2009	100
002D	113	Tarawa-D,Betio	Rep. of Kiribati	Nat. Tidal Ctr., BOM	1992-2009	93
003B	169	Baltra-B	Ecuador	UH Sea Level Center	1985-2010	86
004B	114	Nauru-B	Rep. of Nauru	Nat. Tidal Ctr., BOM	1993-2009	91
005B	112	Majuro-B	Rep. Marshall I.	Nat. Tidal Ctr., BOM	1993-2009	98
007B	120	Malakal-B	Rep. of Belau	UH Sea Level Center	1969-2009	96
009B	66	Honiara-B	Solomon Islands	Nat. Tidal Ctr., BOM	1994-2009	98
015B	140	Papeete-B	French Polynesia	National Ocean Service	1975-2009	97
018B	122	Suva-B	Fiji	Nat. Tidal Ctr., BOM	1998-2009	99
021B	176	Juan Fernandez-B	Chile	SHOA	1985-2010	89
022C	137	Easter-C	Chile	SHOA	1970-2010	83
023B	139	Rarotonga-B	Cook Islands	Nat. Tidal Ctr., BOM	1993-2009	99
024A	143	Penrhyn	Cook Islands	UH Sea Level Center	1977-2010	95
025B	121	Funafuti-B	Tuvalu	Nat. Tidal Ctr., BOM	1993-2009	97
028B	118	Saipan-B	N. Mariana Is.	UH Sea Level Center	1978-2009	87
033A	69	Bitung	Indonesia	BAKOSURTANAL	1986-2009	37
035A	177	San Felix	Chile	SHOA	1987-2010	83
037A		Pago Bay, Guam	USA Trust	National Ocean Service	2004-2011	90
038A	125	Nuku'alofa	Tonga	Nat. Tidal Ctr., BOM	1990-2009	98
039A		Kodiak,Alaska	USA	National Ocean Service	1975-2010	85
040A	302	Adak,Alaska	USA	National Ocean Service	1950-2011	92

041B	102	Dutch Harbor-B,AK	USA	National Ocean Service	1982-2011	97
046B		Port Vila-B	Vanuatu	Nat. Tidal Ctr., BOM	1993-2009	94
047A	103	Chichijima	Japan	Japan Meteor. Agency	1975-2010	100
049A	104	Minamitorishima	Japan	Japan Meteor. Agency	1997-2010	93
050A	106	Midway	USA Trust	National Ocean Service	1947-2011	93
051A	105	Wake	USA Trust	National Ocean Service	1950-2011	92
053A	149	Guam	USA Trust	National Ocean Service	1948-2010	93
055A	111	Kwajalein	Rep. Marshall I.	National Ocean Service	1946-2011	98
056A	144	Pago Pago	USA Trust	National Ocean Service	1948-2011	96
057B	108	Honolulu-B	USA	National Ocean Service	1905-2011	98
058A		Nawiliwili	USA	National Ocean Service	1954-2011	99
059A		Kahului	USA	National Ocean Service	1950-2011	93
060A	287	Hilo	USA	National Ocean Service	1927-2011	82
061A		Mokuoloe	USA	National Ocean Service	1957-2011	81
071A	101	Wellington	New Zealand	LINZ	1944-2010	97
072A	129	Bluff	New Zealand	LINZ	1984-2010	60
073A		Tauranga	New Zealand	LINZ	1984-2010	87
076A		Taranaki	New Zealand	LINZ	1984-2010	89
077A		Nelson	New Zealand	LINZ	1984-2010	58
079A	128	Chatham	New Zealand	UH Sea Level Center	2001-2010	51
080A	174	Antofagasta	Chile	SHOA	1945-2010	93
081A	175	Valparaiso	Chile	SHOA	1944-2010	85
082B	182	Acajutla-B	El Salvador	Inst. Geograf. Naciona	2001-2009	52
084A		Lobos de Afuera	Peru	DHNM	1982-2009	96
085A	170	Buenaventura	Colombia	IDEAM	1953-2011	92
086B		La Union-B	El Salvador	Inst. Geograf. Naciona	2001-2010	74
091A	172	La Libertad	Ecuador	INOCAR	1949-2010	97
092B		Talara-B	Peru	DHNM	1988-2010	76
093B	173	Callao-B	Peru	DHNM	1970-2010	97
094B		Matarani-B	Peru	DHNM	1992-2010	84
096B		San Juan-B	Peru	DHNM	2003-2010	94
098A		Esmeraldas	Ecuador	INOCAR	1990-2010	92
302A	168	Balboa	Panama	Autoridad Canal Panama	1907-2010	98
303A	171	Tumaco	Colombia	IDEAM	1951-2011	83
328A	39	Ko Lak	Thailand	Naval Hydro. Dept.	1985-2010	94
329B	77	Hong Kong-B	China	Hong Kong Observatory	1986-2010	99
330A		Rosslyn Bay	Australia	Nat. Tidal Ctr., BOM	1993-2009	100
331A	58	Brisbane	Australia	Nat. Tidal Ctr., BOM	1984-2009	98
332A	59	Bundaberg	Australia	Nat. Tidal Ctr., BOM	1984-2009	98
333A	57	Fort Denison	Australia	Nat. Tidal Ctr., BOM	1965-2009	95
334A	60	Townsville	Australia	Nat. Tidal Ctr., BOM	1984-2009	100
335A	56	Spring Bay	Australia	Nat. Tidal Ctr., BOM	1985-2009	96
336A	61	Booby Island	Australia	Nat. Tidal Ctr., BOM	1988-2009	93

340A	Kaohsiung	Rep. of China	Central Weather Bureau	1980-2010	98
341A	Keelung	Rep. of China	Central Weather Bureau	1980-2010	85
345A	Nakano Shima	Japan	Japan Ocean. Data Cen.	1984-2010	99
347A 327	Abashiri	Japan	Japan Meteor. Agency	1968-2010	98
348A 326	Hamada	Japan	Japan Meteor. Agency	1984-2010	96
349A 325	Toyama	Japan	Japan Meteor. Agency	1967-2010	99
350A 89	Kushiro	Japan	Japan Meteor. Agency	1963-2010	97
351A 87	Ofunato	Japan	Japan Meteor. Agency	1965-2010	100
352A 86	Mera	Japan	Japan Meteor. Agency	1965-2010	95
353A 85	Kushimoto	Japan	Japan Meteor. Agency	1961-2010	97
354A 82	Aburatsu	Japan	Japan Meteor. Agency	1961-2010	100
355A 81	Naha	Japan	Japan Meteor. Agency	1966-2010	100
356A	Maisaka	Japan	Japan Meteor. Agency	1968-2010	97
357A	Miyakejima	Japan	Japan Ocean. Data Cen.	1964-2010	99
359A	Naze	Japan	Japan Ocean. Data Cen.	1957-2010	94
360A 324	Wakkai	Japan	Japan Meteor. Agency	1967-2010	99
362A 83	Nagasaki	Japan	Japan Meteor. Agency	1985-2010	100
363A	Nishinoomote	Japan	Japan Ocean. Data Cen.	1965-2010	98
364A 88	Hakodate	Japan	Japan Meteor. Agency	1964-2010	94
365A	Ishigaki	Japan	Japan Meteor. Agency	1969-2010	99
375A	Hachinohe	Japan	Japan Meteor. Agency	1980-2010	99
381A 75	Qui Nohn	Vietnam	Mar. Hydromet. Center	1994-2009	57
398A	Marsden Point	New Zealand	LINZ	1975-2010	81
400A 331	Lombrum	Papua New Guinea	Nat. Tidal Ctr., BOM	1994-2009	93
401B	Apia-B	Western Samoa	Nat. Tidal Ctr., BOM	1993-2009	99
402A	Lautoka	Fiji	Nat. Tidal Ctr., BOM	1992-2009	99
403A	Jackson	New Zealand	Nat. Tidal Ctr., BOM	1999-2009	100
540B 155	Prince Rupert-B	Canada	MEDS	1963-2010	99
542A 156	Tofino	Canada	MEDS	1963-2010	95
551A 158	San Francisco,CA	USA	National Ocean Service	1897-2011	100
552A	Kawaihae,HI	USA	National Ocean Service	1989-2011	90
554A 159	La Jolla,CA	USA	National Ocean Service	1924-2011	94
555A	Monterey,CA	USA	National Ocean Service	1973-2011	100
556A	Crescent City,CA	USA	National Ocean Service	1933-2011	91
557A	Port Orford,OR	USA	National Ocean Service	1996-2011	80
558A	Neah Bay,WA	USA	National Ocean Service	1934-2011	97
559A 154	Sitka,AK	USA	National Ocean Service	1938-2011	99
560C 150	Seward-C,AK	USA	National Ocean Service	1967-2011	88
561A	Seldovia,AK	USA	National Ocean Service	1975-2011	89
562A	Valdez,AK	USA	National Ocean Service	1973-2011	90
564A	Willapa Bay,WA	USA	National Ocean Service	1972-2011	96
565A	Port San Luis,CA	USA	National Ocean Service	1948-2011	89
567A	Los Angeles,CA	USA	National Ocean Service	1923-2011	99

569A		San Diego,CA	USA	National Ocean Service	1906-2011	97
570A		Yakutat,AK	USA	National Ocean Service	1961-2011	92
571A		Ketchikan,AK	USA	National Ocean Service	1918-2011	75
572A		Astoria,OR	USA	National Ocean Service	1925-2011	98
573A		Arena Cove,CA	USA	National Ocean Service	1996-2011	100
574A	100	Sand Point,AK	USA	National Ocean Service	1973-2011	97
575A		Charleston,OR	USA	National Ocean Service	1978-2011	99
576A		Humboldt Bay,CA	USA	National Ocean Service	1993-2011	99
577A		Santa Barbara,CA	USA	National Ocean Service	1996-2011	53
578A		Santa Monica,CA	USA	National Ocean Service	1973-2011	94
579A	151	Prudhoe Bay,AK	USA	National Ocean Service	1993-2011	100
583B		Cordova-B,AK	USA	National Ocean Service	1964-2011	87
584A		Port Angeles,WA	USA	National Ocean Service	1979-2011	71
592A	157	South Beach,OR	USA	National Ocean Service	1967-2011	99
594A		Harvest Oil P.,CA	USA	National Ocean Service	1995-2011	58
595A	74	Nome, AK	USA	National Ocean Service	1992-2011	82
665A		Timaru	New Zealand	LINZ	1987-2010	57
667A		Lyttelton	New Zealand	LINZ	1995-2010	97
668A		Napier	New Zealand	LINZ	1989-2010	80
669A		Port Chalmers	New Zealand	LINZ	1985-2010	60
678B		Paita-B	Peru	DHNM	1988-2009	88
683B		Pisco-B	Peru	DHNM	1991-2010	71
684A	178	Puerto Montt	Chile	SHOA	1980-2010	94
699A	44	Tanjong Pagar	Singapore	Port Singapore Auth.	1988-2010	95
104D	26	Diego Garcia-D	United Kingdom	UH Sea Level Center	2003-2009	76
108B	28	Male-B,Hulule	Rep. of Maldives	UH Sea Level Center	1989-2010	94
109A	27	Gan	Rep. of Maldives	UH Sea Level Center	1987-2009	91
114A	4	Salalah	Oman	UH Sea Level Center	1989-2009	87
115C	33	Colombo-C	Sri Lanka	UH Sea Level Center	2006-2010	100
119A	2	Djibouti	Rep. of Djibouti	Port of Djibouti	2007-2011	99
128A	308	Thevenard	Australia	Nat. Tidal Ctr., BOM	1998-2009	99
129A	55	Portland,Vict.	Australia	Nat. Tidal Ctr., BOM	1991-2009	99
133B	68	Ambon-B	Indonesia	BAKOSURTANAL	2008-2009	99
147B	30	Karachi-B	Pakistan	PNHD	2007-2011	99
148A	42	Ko Taphao Noi	Thailand	Naval Hydro. Dept.	1985-2010	97
166A	40	Broome	Australia	Nat. Tidal Ctr., BOM	1986-2009	86
168A	62	Darwin	Australia	Nat. Tidal Ctr., BOM	1984-2009	98
170A	47	Christmas	Australia	Nat. Tidal Ctr., BOM	1986-2009	24
171A	46	Cocos	Australia	Nat. Tidal Ctr., BOM	1985-2009	95
172A	3	Aden	Yemen	Port of Aden	2007-2011	94
175A	53	Fremantle	Australia	Nat. Tidal Ctr., BOM	1984-2009	99
176A	54	Esperance	Australia	Nat. Tidal Ctr., BOM	1985-2009	98
180A	23	Kerguelen	France	LEGOS/OMP	1993-2010	99

181A	13	Durban	South Africa	SANHO	1970-2009	65
184A	76	Port Elizabeth	South Africa	SANHO	1973-2010	71
185A		Mossel Bay	South Africa	SANHO	1964-2010	72
186A		Knysna	South Africa	SANHO	1966-2010	62
187A		East London	South Africa	SANHO	1965-2010	56
188A		Richard's Bay	South Africa	SANHO	1977-2010	55
189A	131	Dumont d'Urville	France	LEGOS/OMP	2008-2010	93
192C	11	Pemba-C	Mozambique	INAHINA	2007-2009	98
907A	37	Akyab (Sittwe)	Myanmar	UH Sea Level Center	2006-2009	99
915A	337	Chabahar	Iran	HDNCC	2007-2011	98
210A	244	Flores,Azores	Portugal	Inst. Hidro. Marinha	1976-2009	58
214A		Lameshur Bay,VI	USA	National Ocean Service	2006-2011	99
218B	250	Funchal-B	Portugal	Inst. Hidro. Marinha	1976-2009	75
219A		Culebra,PR	USA	National Ocean Service	2005-2011	93
221A	268	Simon's Town	South Africa	SANHO	1959-2009	80
223E	253	Dakar-E	Senegal	UH Sea Level Center	1996-2009	64
228A		Tenerife	Spain	Puertos del Estado	1992-2009	94
231C	335	Takoradi-C	Ghana	Survey of Ghana	2007-2009	77
234B	261	Pointe Noire-B	Congo	PAPN	2008-2011	93
235A	329	Palmeira,C.Verde	Portugal	UH Sea Level Center	2000-2010	87
240A		Fernandina Beach	USA	National Ocean Service	1897-2011	45
242A	216	Key West	USA	National Ocean Service	1913-2011	98
245A	206	San Juan	USA	National Ocean Service	1977-2011	95
246A		Magueyes Island	USA	National Ocean Service	1965-2011	97
249D		Bridgetown-D	Barbados	Gov. of Barbados	2008-2010	80
252A		Portland,ME	USA	National Ocean Service	1910-2011	97
253A	290	Newport,RI	USA	National Ocean Service	1930-2011	96
254A		Limetree Bay	USA	National Ocean Service	1982-2011	92
255A		Charlotte Amalie	USA	National Ocean Service	1978-2011	89
258A		Christiansted,VI	USA	National Ocean Service	2006-2011	98
259B	221	Bermuda-B	United Kingdom	National Ocean Service	1985-2011	82
260A	219	Duck Pier,NC	USA	National Ocean Service	1978-2011	99
261A		Charleston,SC	USA	National Ocean Service	1921-2011	98
263A		Aguadilla,PR	USA	National Ocean Service	2006-2011	86
264A	220	Atlantic City,NJ	USA	National Ocean Service	1911-2011	94
265B	207	Cartagena-B	Colombia	IDEAM	1993-2011	63
266A	208	Cristobal	Panama	Autoridad Canal Panama	1907-2010	92
267A		Mona Is.,PR	USA	National Ocean Service	2006-2011	88
274A		Churchill	Canada	MEDS	1961-2010	92
275A	222	Halifax	Canada	MEDS	1920-2010	98
279A		Montauk	USA	National Ocean Service	1959-2011	89
280A	195	Rio de Janeiro	Brazil	Dir. Hidro. e Navegaca	1963-2010	95
290B	305	Port Stanley-B	United Kingdom	POL	1992-2009	91

291A	263	Ascension	United Kingdom	POL	1993-2009	64
293A	236	Lerwick	United Kingdom	POL	1959-2010	95
294A	241	Newlyn	United Kingdom	POL	1915-2010	98
295A	238	Stornoway	United Kingdom	POL	1976-2010	83
700A	188	Faraday	United Kingdom	POL	1959-2009	73
701A		Port Nolloth	South Africa	SANHO	1958-2010	76
702A		Luderitz	South Africa	SANHO	1958-2010	66
703A		Saldahna Bay	South Africa	SANHO	1973-2010	72
704A		Cape Town	South Africa	SANHO	1967-2009	75
729A	192	Mar Del Plata	Argentina	UH Sea Level Center	2004-2009	98
732A		Isabel Segunda,PR	USA	National Ocean Service	2009-2011	100
733A		Esperanza,PR	USA	National Ocean Service	2005-2011	92
734A		Yabucoa,PR	USA	National Ocean Service	2008-2011	94
735A		Arecibo,PR	USA	National Ocean Service	2008-2011	100
736A		Mayaguez,PR	USA	National Ocean Service	2008-2011	100
737A		San Andres	Colombia	IDEAM	1997-2011	55
740A		Eastport,ME	USA	National Ocean Service	1929-2011	94
741A		Boston,MA	USA	National Ocean Service	1921-2011	99
742A		Woods Hole,MA	USA	National Ocean Service	1957-2011	90
743A		Nantucket,MA	USA	National Ocean Service	1965-2011	96
744A		New London,CT	USA	National Ocean Service	1938-2011	95
745A		New York,NY	USA	National Ocean Service	1958-2011	87
746A		Cape May,NJ	USA	National Ocean Service	1965-2011	89
747A		Lewes,DE	USA	National Ocean Service	1957-2011	97
749A		Chesapeake BBT,VA	USA	National Ocean Service	1975-2011	99
750A		Wilmington,NC	USA	National Ocean Service	1935-2011	98
752A	289	Fort Pulaski,GA	USA	National Ocean Service	1935-2011	95
755A	332	Virginia Key,FL	USA	National Ocean Service	1996-2011	99
757A		Naples,FL	USA	National Ocean Service	1996-2011	95
759A		St. Petersburg,FL	USA	National Ocean Service	1946-2011	96
760A		Apalachicola,FL	USA	National Ocean Service	1996-2011	97
762A	288	Pensacola,FL	USA	National Ocean Service	1923-2011	96
763A		Dauphin Island AL	USA	National Ocean Service	1996-2011	70
765A		Grand Isle,LA	USA	National Ocean Service	1980-2011	97
766A		Sabine Pass N, TX	USA	National Ocean Service	1992-2011	98
767A		Galveston,P.Pier	USA	National Ocean Service	1957-2011	97
769A		Rockport,TX	USA	National Ocean Service	1987-2011	100
770A		Corpus Cristi,TX	USA	National Ocean Service	1988-2011	99
772A		Port Isabel,TX	USA	National Ocean Service	1977-2011	97
773A		Clearwater Bch,FL	USA	National Ocean Service	1996-2011	96
774A		Port Canaveral,FL	USA	National Ocean Service	1994-2011	98
775A	217	Galveston,Pier21	USA	National Ocean Service	1904-2011	96
783B		Fajardo-B,PR	USA	National Ocean Service	2008-2011	100

806A		Nouakchott	Mauritania	PAN	2007-2011	90
807A	349	Alexandria	Egypt	NIOF	2009-2011	94
816A	350	Port Sonara	Cameroon	SNR	2008-2011	83
832A	342	Rothera	United Kingdom	POL	2002-2009	66

A.6 Replaced Years within Existing Series

YEAR-MON	JASL	STATION	ORIG.	YEARS	COUNT YEARS	COMMENT
9-Oct	033a	Bitung	UHSLC	2008-2009	2	2003-2004 thrown out, bad
9-Oct	109a	Gan	UHSLC	2002-2009	8	replace 2002-2003, ok
9-Oct	101a	Mombasa	UHSLC	2001-2008	8	replace 2001
9-Nov	029a	Kapingamarangi	UHSLC	2000-2008	9	replace 2000-2006
9-Dec	652a	Vung Tau		1992-1992	1	remove this series since we have same year in 383A
10-May	001c	Pohnpei	NTC	2001-2009	9	UHSLC 001B has overlapping data
10-May	148a	Ko Taphao Noi	UHSLC	2005-2009	5	UHSLC primary after 12 Oct 2005
10-Sep	166a	Broome	NTC	1986-2009	24	replacement due to new datum
10-Sep	168a	Darwin	NTC	1984-2009	26	replacement due to new datum
10-Sep	003b	Baltra	UHSLC	2004-2009	6	replace 2004
10-Oct	104d	Diego Garcia-D	UHSLC	2003-2009	7	new reference level
10-Oct	030a	Santa Cruz	UHSLC	2004-2007	4	replace 2004
11-Jan	053a	Guam	NOS	2006-2007	2	replace old data with gaps
11-Feb	216a	Porto Grande	IHM	1990-1993	4	shift time zone -1 hr
11-Feb	222a	Praia-A	ORSTOM	1984-1985	2	shift time + 1hr
11-Feb	205b	Arrecife-B	IEO	1973-1985	13	shift time + 1hr
11-Feb	205a	Arrecife-A	IEO	1959-1973	15	shift time + 1hr
11-Feb	205c	Arrecife-C	IEO	1985-1986	2	shift time + 1hr
11-Feb	205d	Arrecife-D	IEO	1987-1991	5	shift time + 1hr
11-Feb	206a	S.Cruz Palma-A	IEO	1949-1959	11	shift time + 1hr
11-Feb	206b	S.Cruz Palma-B	IEO	1959-1981	23	shift time + 1hr
11-Feb	206c	S.Cruz Palma-C	IEO	1981-1988	8	shift time + 1hr
11-Apr	082a	Acajutla	IGN	1962-2001	40	IGN replacement set
11-Apr	340a	Kaohsiung	CWB	2010-2010	1	correct level 2007-
11-Apr	341a	Keelung	CWB	2010-2010	1	correct level 11/2007-
11-May	180a	Kerguelen	LEGOS	1993-2010	18	replace 1993-1998
11-Jun	543a	Victoria,BC	MEDS	1909-2007	99	replaced 1909-1964
11-Jul	173a	Davis	NTF	1993-1993	1	replaced for timing
11-Aug	577a	Santa Barbara	NOS	2005-2011	7	replace 2005-8
11-Sep	345a	Nakanoshima	JODC	2008-2010	3	replace 84-07, time shift
11-Sep	127a	Syowa	JODC	2002-2007	6	replace 87-01
11-Oct	703a	Saldahna Bay	SANHO	2007-2010	4	replace 2007

A.7 Series with 60-Year Minimum Length

NSL: Newly reached 60-year minimum length since May 2009; CI: Completeness Index

JASL	NSL	GLOSS	STATION	COUNTRY	LAT	LONG	YEARS	CI
040A	yes	302	Adak,Alaska	USA	51-52N	176-38W	1950-2011	92
050A		106	Midway	USA Trust	28-13N	177-22W	1947-2011	93
051A	yes	105	Wake	USA Trust	19-17N	166-37E	1950-2011	92
053A		149	Guam	USA Trust	13-26N	144-39E	1948-2010	93
055A		111	Kwajalein	Rep. Marshall I.	08-44N	167-44E	1946-2011	98
056A		144	Pago Pago	USA Trust	14-17S	170-41W	1948-2011	96
057B		108	Honolulu-B	USA	21-18N	157-52W	1905-2011	98
059A	yes		Kahului	USA	20-54N	156-28W	1950-2011	93
060A		287	Hilo	USA	19-44N	155-04W	1927-2011	82
071A		101	Wellington	New Zealand	41-17S	174-47E	1944-2010	97
080A		174	Antofagasta	Chile	23-39S	070-24W	1945-2010	93
081A		175	Valparaiso	Chile	33-02S	071-38W	1944-2010	85
091A		172	La Libertad	Ecuador	02-12S	080-55W	1949-2010	97
302A		168	Balboa	Panama	08-58N	079-34W	1907-2010	98
303A	yes	171	Tumaco	Colombia	01-50N	078-44W	1951-2011	83
543A	yes		Victoria,BC	Canada	48-25N	123-22W	1909-2007	99
551A		158	San Francisco,CA	USA	37-48N	122-28W	1897-2011	100
554A		159	La Jolla,CA	USA	32-52N	117-15W	1924-2011	94
556A			Crescent City,CA	USA	41-45N	124-11W	1933-2011	91
558A			Neah Bay,WA	USA	48-22N	124-37W	1934-2011	97
559A		154	Sitka,AK	USA	57-03N	135-21W	1938-2011	99
565A			Port San Luis,CA	USA	35-11N	120-46W	1948-2011	89
567A			Los Angeles,CA	USA	33-43N	118-16W	1923-2011	99
569A			San Diego,CA	USA	32-43N	117-10W	1906-2011	97
571A			Ketchikan,AK	USA	55-20N	131-38W	1918-2011	75
572A			Astoria,OR	USA	46-13N	123-46W	1925-2011	98
207A		249	Ceuta	Spain	35-54N	005-19W	1944-2008	96
240A	yes		Fernandina Beach	USA	30-40N	081-28W	1897-2011	45
242A		216	Key West	USA	24-33N	081-49W	1913-2011	98
252A			Portland,ME	USA	43-39N	070-15W	1910-2011	97
253A		290	Newport,RI	USA	41-30N	071-20W	1930-2011	96
261A			Charleston,SC	USA	32-47N	079-56W	1921-2011	98
264A		220	Atlantic City,NJ	USA	39-21N	074-25W	1911-2011	94
266A		208	Cristobal	Panama	09-21N	079-55W	1907-2010	92
275A		222	Halifax	Canada	44-40N	063-35W	1920-2010	98
294A		241	Newlyn	United Kingdom	50-06N	005-33W	1915-2010	98
740A			Eastport,ME	USA	44-54N	066-59W	1929-2011	94
741A			Boston,MA	USA	42-21N	071-03W	1921-2011	99

744A		New London,CT	USA	41-21N	072-05W	1938-2011	95
750A		Wilmington,NC	USA	34-14N	077-57W	1935-2011	98
752A	289	Fort Pulaski,GA	USA	32-02N	080-54W	1935-2011	95
753A		Mayport,FL	USA	30-24N	081-26W	1928-2000	99
759A		St. Petersburg,FL	USA	27-46N	082-38W	1946-2011	96
762A	288	Pensacola,FL	USA	30-24N	087-13W	1923-2011	96
775A	217	Galveston,Pier21	USA	29-19N	094-48W	1904-2011	96
804A	yes	Tregde	Norway	58-00N	007-34E	1927-2003	94
822A	242	Brest	France	48-23N	004-30W	1846-2007	91
825A	284	Cuxhaven	Germany	53-52N	008-43E	1917-1987	100
826A	341	Stockholm	Sweden	59-20N	018-05E	1889-2007	99
830A	243	La Coruna	Spain	43-22N	008-24W	1943-2008	97

A.8 GLOSS Inventory: Status November 2011

CI: Completeness Index

GLOSS	JASL	STATION	COUNTRY	LAT	LONG	YEARS	CI
2	119A	Djibouti	Rep. of Djibouti	11-37N	043-08E	2007-2011	99
3	172A	Aden	Yemen	12-47N	044-59E	2007-2011	94
4	114A	Salalah	Oman	16-56N	054-00E	1989-2009	87
8	101A	Mombasa	Kenya	04-04S	039-39E	1986-2008	73
11	192A	Pemba-A	Mozambique	12-58S	040-30E	1971-1973	25
11	192B	Pemba-B	Mozambique	12-58S	040-29E	1982-1984	64
11	192C	Pemba-C	Mozambique	12-58S	040-29E	2007-2009	98
12	256A	Exuma Cays	Bahamas	23-46N	076-06W	1992-1993	99
13	181A	Durban	South Africa	29-52S	031-03E	1970-2009	65
15	150A	Nosy Be	Madagascar	13-24S	048-18E	1987-2000	59
17	164A	Reunion	France	20-55S	055-18E	1982-1986	93
18	103A	Port Louis-A	Mauritius	20-09S	057-29E	1942-1947	90
18	103B	Port Louis-B	Mauritius	20-09S	057-29E	1964-1965	86
18	103C	Port Louis-C	Mauritius	20-09S	057-30E	1986-2008	99
19	105A	Rodrigues	Mauritius	19-40S	063-25E	1986-2003	96
21	178A	Crozet-A	France	46-26S	051-52E	1995-1999	52
21	178B	Crozet-B	France	46-26S	051-52E	2000-2001	76
22	177A	Mawson	Australia	67-36S	062-52E	1992-2006	93
23	180A	Kerguelen	France	49-21S	070-13E	1993-2010	99
24	179A	Saint Paul	France	38-43S	077-32E	1994-2006	92
26	104B	Diego Garcia-B	United Kingdom	07-14S	072-26E	1969-1969	41
26	104C	Diego Garcia-C	United Kingdom	07-17S	072-24E	1988-2000	80
26	104D	Diego Garcia-D	United Kingdom	07-17S	072-24E	2003-2009	76
27	109A	Gan	Rep. of Maldives	00-41S	073-09E	1987-2009	91
28	108A	Male-A	Rep. of Maldives	04-11N	073-31E	1988-1989	100
28	108B	Male-B,Hulule	Rep. of Maldives	04-11N	073-32E	1989-2010	94
30	147A	Karachi-A	Pakistan	24-48N	066-58E	1985-1994	83

30	147B	Karachi-B	Pakistan	24-49N	066-59E	2007-2011	99
33	115A	Colombo-A	Sri Lanka	06-56N	079-51E	1953-1965	94
33	115B	Colombo-B	Sri Lanka	06-57N	079-51E	1989-1992	96
33	115C	Colombo-C	Sri Lanka	06-57N	079-51E	2006-2010	100
36	138A	Charchanga	Bangladesh	22-13N	091-03E	1980-2000	97
37	907A	Akyab (Sittwe)	Myanmar	20-08N	092-54E	2006-2009	99
39	328A	Ko Lak	Thailand	11-48N	099-49E	1985-2010	94
40	166A	Broome	Australia	18-00S	122-13E	1986-2009	86
42	148A	Ko Taphao Noi	Thailand	07-50N	098-26E	1985-2010	97
43	143A	Lumut	Malaysia	04-14N	100-37E	1984-2006	97
44	327A	Keppel Harbour	Singapore	01-16N	103-49E	1981-1990	99
44	337A	Victoria Dock	Singapore	01-16N	103-49E	1972-1981	95
44	699A	Tanjong Pagar	Singapore	01-16N	103-51E	1988-2010	95
45	107A	Padang-A	Indonesia	00-57S	100-22E	1986-1998	53
45	107B	Padang-B	Indonesia	00-60S	100-23E	2005-2007	83
46	171A	Cocos	Australia	12-07S	096-54E	1985-2009	95
47	170A	Christmas	Australia	10-25S	105-40E	1986-2009	24
49	163A	Benoa-A	Indonesia	08-45S	115-13E	1988-2004	69
49	163B	Benoa-B	Indonesia	08-45S	115-13E	2006-2007	98
51	169A	Port Hedland	Australia	20-19S	118-34E	1984-2005	98
52	167A	Carnarvon	Australia	24-54S	113-39E	1984-2005	82
53	175A	Fremantle	Australia	32-03S	115-44E	1984-2009	99
54	176A	Esperance	Australia	33-52S	121-54E	1985-2009	98
55	129A	Portland,Vict.	Australia	38-21S	141-37E	1991-2009	99
56	335A	Spring Bay	Australia	42-33S	147-56E	1985-2009	96
57	333A	Fort Denison	Australia	33-51S	151-14E	1965-2009	95
58	331A	Brisbane	Australia	27-22S	153-10E	1984-2009	98
59	332A	Bundaberg	Australia	24-50S	152-23E	1984-2009	98
60	334A	Townsville	Australia	19-15S	146-50E	1984-2009	100
61	336A	Booby Island	Australia	10-36S	141-55E	1988-2009	93
62	168A	Darwin	Australia	12-28S	130-51E	1984-2009	98
63	069A	Alotau	Papua New Guinea	10-10S	150-27E	1984-1995	62
65	010A	Rabaul	Papua New Guinea	04-12S	152-11E	1966-1997	85
66	009A	Honiara-A	Solomon Islands	09-26S	159-57E	1974-1995	98
66	009B	Honiara-B	Solomon Islands	09-25S	159-57E	1994-2009	98
68	133A	Ambon-A	Indonesia	03-41S	128-11E	1992-2004	46
68	133B	Ambon-B	Indonesia	03-41S	128-11E	2008-2009	99
69	033A	Bitung	Indonesia	01-26N	125-12E	1986-2009	37
70	373A	Jolo	Philippines	06-04N	121-00E	1984-1995	86
71	372A	Davao-A	Philippines	07-05N	125-38E	1984-1997	92
71	372B	Davao-B	Philippines	07-05N	125-38E	1998-2008	54
72	371A	Legaspi	Philippines	13-09N	123-45E	1984-2007	86
73	370A	Manila	Philippines	14-35N	120-58E	1984-2008	90

74	595A	Nome, AK	USA	64-30N	165-26W	1992-2011	82
75	381A	Qui Nohn	Vietnam	13-46N	109-15E	1994-2009	57
76	184A	Port Elizabeth	South Africa	33-58S	025-38E	1973-2010	71
77	329A	Hong Kong-A	China	22-18N	114-12E	1962-1985	97
77	329B	Hong Kong-B	China	22-18N	114-13E	1986-2010	99
78	635A	Zhapo-A	China	21-35N	111-50E	1975-1997	100
79	630A	Dalian-A	China	38-56N	121-40E	1975-1990	98
79	631A	Laohutan-A	China	38-52N	121-41E	1991-1997	100
81	355A	Naha	Japan	26-13N	127-40E	1966-2010	100
82	354A	Aburatsu	Japan	31-34N	131-25E	1961-2010	100
83	362A	Nagasaki	Japan	32-44N	129-52E	1985-2010	100
85	353A	Kushimoto	Japan	33-28N	135-47E	1961-2010	97
86	352A	Mera	Japan	34-55N	139-50E	1965-2010	95
87	351A	Ofunato	Japan	39-01N	141-45E	1965-2010	100
88	364A	Hakodate	Japan	41-47N	140-44E	1964-2010	94
89	350A	Kushiro	Japan	42-58N	144-23E	1963-2010	97
94	632A	Kanmen-A	China	28-05N	121-17E	1975-1997	100
95	127A	Syowa	Japan	69-00S	039-36E	1987-2007	100
96	155A	Dzaoudzi	Mayotte	12-47S	045-15E	1985-1995	67
100	574A	Sand Point,AK	USA	55-20N	160-30W	1973-2011	97
101	071A	Wellington	New Zealand	41-17S	174-47E	1944-2010	97
102	041A	Dutch Harbor-A,AK	USA	53-53N	166-32W	1950-1955	100
102	041B	Dutch Harbor-B,AK	USA	53-53N	166-32W	1982-2011	97
103	047A	Chichijima	Japan	27-06N	142-11E	1975-2010	100
104	049A	Minamitorishima	Japan	24-18N	153-59E	1997-2010	93
105	051A	Wake	USA Trust	19-17N	166-37E	1950-2011	92
106	050A	Midway	USA Trust	28-13N	177-22W	1947-2011	93
107	014A	French Frigate S	USA	23-52N	166-17W	1974-2004	97
108	057A	Honolulu-A	USA	21-18N	157-52W	1877-1892	32
108	057B	Honolulu-B	USA	21-18N	157-52W	1905-2011	98
109	052A	Johnston	USA Trust	16-44N	169-32W	1947-2003	95
111	055A	Kwajalein	Rep. Marshall I.	08-44N	167-44E	1946-2011	98
112	005A	Majuro-A	Rep. Marshall I.	07-06N	171-22E	1968-1999	92
112	005B	Majuro-B	Rep. Marshall I.	07-07N	171-22E	1993-2009	98
113	002A	Tarawa-A,Betio	Rep. of Kiribati	01-22N	172-56E	1974-1983	78
113	002B	Tarawa-B,Bairiki	Rep. of Kiribati	01-20N	173-01E	1983-1988	98
113	002C	Tarawa-C,Betio	Rep. of Kiribati	01-22N	172-56E	1988-1997	100
113	002D	Tarawa-D,Betio	Rep. of Kiribati	01-22N	172-56E	1992-2009	93
114	004A	Nauru-A	Rep. of Nauru	00-32S	166-54E	1974-1995	95
114	004B	Nauru-B	Rep. of Nauru	00-32S	166-55E	1993-2009	91
115	001A	Pohnpei-A	Fd St Micronesia	06-59N	158-14E	1969-1971	100
115	001B	Pohnpei-B	Fd St Micronesia	06-59N	158-15E	1974-2004	98
115	001C	Pohnpei-C	Fd St Micronesia	06-59N	158-12E	2001-2009	100

116	054A	Truk	Fd St Micronesia	07-27N	151-51E	1963-1991	89
117	029A	Kapingamarangi	Fd St Micronesia	01-06N	154-47E	1978-2008	94
118	028A	Saipan-A	N. Mariana Is.	15-13N	145-44E	1938-1940	97
118	028B	Saipan-B	N. Mariana Is.	15-14N	145-45E	1978-2009	87
119	008A	Yap-A	Fd St Micronesia	09-31N	138-08E	1951-1952	100
119	008B	Yap-B	Fd St Micronesia	09-31N	138-08E	1969-2005	92
120	007A	Malakal-A	Rep. of Belau	07-20N	134-29E	1926-1939	92
120	007B	Malakal-B	Rep. of Belau	07-20N	134-28E	1969-2009	96
121	025A	Funafuti-A	Tuvalu	08-32S	179-12E	1977-1999	97
121	025B	Funafuti-B	Tuvalu	08-30S	179-13E	1993-2009	97
122	018A	Suva-A	Fiji	18-08S	178-26E	1972-1997	91
122	018B	Suva-B	Fiji	18-08S	178-26E	1998-2009	99
123	019A	Noumea	France	22-18S	166-26E	1967-2003	99
124	062A	Norfolk Island-A	Australia	29-04S	167-57E	1985-1986	98
124	062B	Norfolk Island-B	Australia	29-04S	167-56E	1994-1999	100
125	038A	Nuku'alofa	Tonga	21-08S	175-11W	1990-2009	98
127	070A	Auckland	New Zealand	36-51S	174-46E	1984-1988	100
128	079A	Chatham	New Zealand	43-57S	176-34W	2001-2010	51
129	072A	Bluff	New Zealand	46-36S	168-21E	1984-2010	60
130	680A	Macquerie Is.-A	Australia	54-29S	158-58E	1912-1913	97
130	680B	Macquerie Is.-B	Australia	54-29S	158-58E	1968-1972	45
130	680C	Macquerie Is.-C	Australia	54-29S	158-58E	1993-2007	79
131	189A	Dumont d'Urville	France	66-40S	140-01E	2008-2010	93
134	663A	Scott Base	New Zealand	77-51S	166-45E	2001-2006	92
137	022A	Easter-A	Chile	27-09S	109-27W	1957-1958	97
137	022B	Easter-B	Chile	27-09S	109-27W	1962-1963	100
137	022C	Easter-C	Chile	27-09S	109-28W	1970-2010	83
138	016A	Rikitea	French Polynesia	23-08S	134-57W	1969-2003	92
139	023A	Rarotonga-A	Cook Islands	21-12S	159-47W	1977-1997	98
139	023B	Rarotonga-B	Cook Islands	21-12S	159-47W	1993-2009	99
140	015A	Papeete-A	French Polynesia	17-32S	149-34W	1969-1975	91
140	015B	Papeete-B	French Polynesia	17-32S	149-34W	1975-2009	97
142	031A	Nuku Hiva	French Polynesia	08-56S	140-05W	1982-1997	49
143	024A	Penrhyn	Cook Islands	08-59S	158-03W	1977-2010	95
144	056A	Pago Pago	USA Trust	14-17S	170-41W	1948-2011	96
145	013A	Kanton-A	Rep. of Kiribati	02-49S	171-43W	1949-1967	100
145	013B	Kanton-B	Rep. of Kiribati	02-49S	171-43W	1972-2007	87
146	011A	Christmas-A	Rep. of Kiribati	01-59N	157-29W	1955-1972	89
146	011B	Christmas-B	Rep. of Kiribati	01-59N	157-28W	1974-2003	96
148	399A	Lord Howe-A	Australia	31-31S	159-04E	1958-1967	80
148	399B	Lord Howe-B	Australia	31-31S	159-04E	1991-2006	96
149	053A	Guam	USA Trust	13-26N	144-39E	1948-2010	93
150	560A	Seward-A,AK	USA	60-07N	149-26W	1925-1932	98

150	560B	Seward-B,AK	USA	60-07N	149-26W	1944-1949	77
150	560C	Seward-C,AK	USA	60-07N	149-26W	1967-2011	88
151	579A	Prudhoe Bay,AK	USA	70-24N	148-32W	1993-2011	100
154	559A	Sitka,AK	USA	57-03N	135-21W	1938-2011	99
155	540A	Prince Rupert-A	Canada	54-19N	130-20W	1910-1918	79
155	540B	Prince Rupert-B	Canada	54-19N	130-19W	1963-2010	99
156	542A	Tofino	Canada	49-09N	125-55W	1963-2010	95
157	592A	South Beach,OR	USA	44-38N	124-03W	1967-2011	99
158	551A	San Francisco,CA	USA	37-48N	122-28W	1897-2011	100
159	554A	La Jolla,CA	USA	32-52N	117-15W	1924-2011	94
160	036A	Guadalupe	Mexico	28-53N	118-18W	1977-1985	75
161	034A	Cabo San Lucas	Mexico	22-53N	109-55W	1973-2003	81
162	090A	Socorro	Mexico	18-44N	111-01W	1957-1959	81
163	395A	Manzanillo-A	Mexico	19-03N	104-20W	1953-1982	95
163	395B	Manzanillo-B	Mexico	19-03N	104-20W	1992-2003	78
164	672A	Puerto Angel	Mexico	15-39N	096-30W	1962-1984	74
165	391A	Clipperton-A	France	10-17N	109-13W	1985-1985	47
165	391B	Clipperton-B	France	10-17N	109-13W	1986-1988	100
167	087A	Quepos	Costa Rica	09-24N	084-10W	1961-1994	83
168	302A	Balboa	Panama	08-58N	079-34W	1907-2010	98
169	003A	Baltra-A	Ecuador	00-26S	090-17W	1968-1977	93
169	003B	Baltra-B	Ecuador	00-26S	090-17W	1985-2010	86
170	085A	Buenaventura	Colombia	03-54N	077-06W	1953-2011	92
171	303A	Tumaco	Colombia	01-50N	078-44W	1951-2011	83
172	091A	La Libertad	Ecuador	02-12S	080-55W	1949-2010	97
173	093A	Callao-A	Peru	12-03S	077-09W	1950-1965	98
173	093B	Callao-B	Peru	12-03S	077-09W	1970-2010	97
174	080A	Antofagasta	Chile	23-39S	070-24W	1945-2010	93
175	081A	Valparaiso	Chile	33-02S	071-38W	1944-2010	85
176	021A	Juan Fernandez-A	Chile	33-37S	078-50W	1977-1984	67
176	021B	Juan Fernandez-B	Chile	33-38S	078-50W	1985-2010	89
177	035A	San Felix	Chile	26-18S	080-07W	1987-2010	83
178	684A	Puerto Montt	Chile	41-29S	072-58W	1980-2010	94
181	600A	Ushuaia	Argentina	54-48S	068-18W	1996-2006	78
182	082A	Acajutla-A	El Salvador	13-35N	089-50W	1962-2001	96
182	082B	Acajutla-B	El Salvador	13-35N	089-50W	2001-2009	52
185	601A	Esperanza	Argentina	63-24S	056-60W	1996-1998	86
188	700A	Faraday	United Kingdom	65-15S	064-16W	1959-2009	73
189	730A	Base Prat	Chile	62-29S	059-38W	1984-2002	96
190	286A	Puerto Deseado	Argentina	47-45S	065-55W	1988-1989	87
192	729A	Mar Del Plata	Argentina	38-03S	057-33W	2004-2009	98
193	714A	Porto Rio Grande	Brazil	32-08S	052-06W	1981-2003	22
194	281A	Cananeia	Brazil	25-01S	047-56W	1954-2006	99

195	280A	Rio de Janeiro	Brazil	22-54S	043-10W	1963-2010	95
195	709A	R.Janeiro,USCGS	Brazil	22-56S	043-08W	1955-1968	70
198	203A	Fer. de Nor.-A	Brazil	03-50S	032-24W	1982-1983	100
198	203B	Fer. de Nor.-B	Brazil	03-50S	032-24W	1984-1985	100
198	203C	Fer. de Nor.-C	Brazil	03-50S	032-24W	1985-1986	100
199	201A	St. Peter&Paul R.	Brazil	00-55N	029-21W	1982-1985	99
200	715A	Madeira	Brazil	02-34S	044-23W	1988-2003	85
201	716A	Santana-A	Brazil	00-03S	051-11W	1970-1972	100
201	716B	Santana-B	Brazil	00-03S	051-11W	1975-1976	100
201	716C	Santana-C	Brazil	00-03S	051-11W	1984-1985	100
201	716D	Santana-D	Brazil	00-03S	051-11W	1996-1997	100
201	716E	Santana-E	Brazil	00-04S	051-10W	2006-2007	93
201	717A	Santana SSN-A	Brazil	00-04S	051-10W	1994-1995	99
201	717B	Santana SSN-B	Brazil	00-04S	051-10W	1999-2000	99
202	227A	Cayenne	France	04-51N	052-17W	2006-2007	67
203	248A	Port-of-Spain	Trinidad/Tobago	10-39N	061-31W	1984-1992	81
204	270A	Le Robert	France	14-41N	060-56W	1976-1984	61
205	824A	Marseille	France	43-18N	005-21E	1985-2007	48
206	245A	San Juan	USA	18-28N	066-07W	1977-2011	95
207	265A	Cartagena-A	Colombia	10-23N	075-32W	1951-1993	90
207	265B	Cartagena-B	Colombia	10-23N	075-32W	1993-2011	63
208	266A	Cristobal	Panama	09-21N	079-55W	1907-2010	92
210	782A	Port Royal	Jamaica	17-56N	076-51W	1965-1971	99
211	257A	Settlement Pnt.-A	Bahamas	26-43N	078-60W	1985-2002	91
211	257B	Settlement Pnt.-B	Bahamas	26-41N	078-59W	2002-2003	78
212	250A	Veracruz-A,Ver.	Mexico	19-12N	096-08W	1985-2008	54
212	250B	Veracruz-B,Ver.	Mexico	19-12N	096-08W	1999-2004	63
213	721A	Progreso-A, Yuc.	Mexico	21-17N	089-40W	1980-1984	98
213	721B	Progreso-B, Yuc.	Mexico	21-17N	089-40W	1999-2004	63
215	239A	Siboney	Cuba	23-06N	082-28W	1990-1990	99
216	242A	Key West	USA	24-33N	081-49W	1913-2011	98
217	775A	Galveston,Pier21	USA	29-19N	094-48W	1904-2011	96
219	260A	Duck Pier,NC	USA	36-11N	075-45W	1978-2011	99
220	264A	Atlantic City,NJ	USA	39-21N	074-25W	1911-2011	94
221	259A	Bermuda-A	United Kingdom	32-22N	064-42W	1932-1949	78
221	259B	Bermuda-B	United Kingdom	32-22N	064-42W	1985-2011	82
222	275A	Halifax	Canada	44-40N	063-35W	1920-2010	98
223	276A	St. John's-A	Canada	47-34N	052-42W	1961-1993	96
223	276B	St. John's-B	Canada	47-34N	052-42W	1993-2006	97
224	833A	Nain	Canada	56-33N	061-42W	2001-2006	83
228	297A	Ammassalik	Denmark	65-36N	037-00W	1990-1998	78
229	288A	Reykjavik	Iceland	64-09N	021-56W	1984-1999	94
233	819A	Goteborg-Torsh.	Sweden	57-41N	011-48E	1967-2006	100

234	803A	Rorvik	Norway	64-52N	11-15E	1969-2003	96
236	293A	Lerwick	United Kingdom	60-09N	001-08W	1959-2010	95
238	295A	Stornoway	United Kingdom	58-13N	006-23W	1976-2010	83
239	834A	Malin Head	Ireland	55-22N	007-20W	1958-2001	95
241	294A	Newlyn	United Kingdom	50-06N	005-33W	1915-2010	98
242	822A	Brest	France	48-23N	004-30W	1846-2007	91
243	830A	La Coruna	Spain	43-22N	008-24W	1943-2008	97
244	210A	Flores,Azores	Portugal	39-27N	031-07W	1976-2009	58
245	211A	Ponta Delgada	Portugal	37-44N	025-40W	1978-2007	68
246	209A	Cascais	Portugal	38-42N	009-25W	1959-2005	88
247	376A	Xiamen	China	24-27N	118-04E	1954-1997	100
248	289A	Gibraltar	United Kingdom	36-09N	005-22W	1961-2000	69
249	207A	Ceuta	Spain	35-54N	005-19W	1944-2008	96
250	218B	Funchal-B	Portugal	32-39N	016-55W	1976-2009	75
251	217A	Las Palmas-A	Spain	28-06N	015-24W	1949-1956	95
251	217B	Las Palmas-B	Spain	28-06N	015-24W	1971-1982	88
251	217C	Las Palmas-C	Spain	28-06N	015-24W	1983-1991	73
251	217D	Las Palmas-D	Spain	28-08N	015-25W	1991-2008	100
253	223A	Dakar-A	Senegal	14-40N	017-26W	1982-1983	100
253	223B	Dakar-B	Senegal	14-40N	017-26W	1983-1985	100
253	223C	Dakar-C	Senegal	14-40N	017-26W	1986-1986	44
253	223D	Dakar-D	Senegal	14-40N	017-26W	1986-1989	94
253	223E	Dakar-E	Senegal	14-41N	017-25W	1996-2009	64
254	216A	Porto Grande	Portugal	16-52N	024-59W	1990-1993	38
257	230A	Abidjan-Vridi	Ivory Coast	05-15N	004-00W	1982-1988	100
259	233A	Lagos-A	Nigeria	06-25N	003-27E	1961-1969	63
259	233C	Lagos-C	Nigeria	06-25N	003-25E	1992-1996	74
260	225A	Sao Tome	Sao Tome/Principe	00-01N	006-31E	1985-1988	58
261	234A	Pointe Noire-A	Congo	04-48S	011-51E	1980-1988	77
261	234B	Pointe Noire-B	Congo	04-47S	011-50E	2008-2011	93
262	237A	Lobito	Angola	12-20S	013-34E	1971-1975	88
263	291A	Ascension	United Kingdom	07-55S	014-25W	1993-2009	64
264	292A	St. Helena	United Kingdom	15-55S	005-43W	1993-2006	75
265	204A	Trindade	Brazil	20-30S	029-19W	1983-1983	16
267	316A	Acapulco-A,Gro.	Mexico	16-50N	099-55W	1952-1995	91
267	316B	Acapulco-B,Gro.	Mexico	16-50N	099-55W	1999-2005	88
268	221A	Simon's Town	South Africa	34-11S	018-26E	1959-2009	80
276	244A	Gibara	Cuba	21-07N	076-07W	1985-1992	100
277	173A	Davis	Australia	68-27S	077-58E	1993-2006	100
278	130A	Casey	Australia	66-17S	110-32E	1996-2006	90
283	633A	Lusi-A	China	32-08N	121-37E	1975-1996	98
284	825A	Cuxhaven	Germany	53-52N	008-43E	1917-1987	100
287	060A	Hilo	USA	19-44N	155-04W	1927-2011	82

288	762A	Pensacola,FL	USA	30-24N	087-13W	1923-2011	96
289	752A	Fort Pulaski,GA	USA	32-02N	080-54W	1935-2011	95
290	253A	Newport,RI	USA	41-30N	071-20W	1930-2011	96
291	162A	Cilacap-A	Indonesia	07-45S	109-01E	1984-2004	40
291	162B	Cilacap-B	Indonesia	07-45S	109-01E	2007-2008	100
292	160A	Surabaya	Indonesia	07-13S	112-44E	1984-2004	81
293	320A	Cendering	Malaysia	05-16N	103-11E	1984-2006	99
297	151A	Zanzibar	Tanzania	06-09S	039-11E	1984-2006	100
302	040A	Adak,Alaska	USA	51-52N	176-38W	1950-2011	92
305	290A	Port Stanley-A	United Kingdom	52-42S	057-52W	1964-1974	47
305	290B	Port Stanley-B	United Kingdom	51-45S	057-56W	1992-2009	91
308	128A	Thevenard	Australia	32-09S	133-38E	1998-2009	99
309	626A	Providenya-A	Russia	64-24N	173-12W	1977-1985	100
309	626B	Providenya-B	Russia	64-24N	173-12W	1986-1989	100
314	220A	Walvis Bay	Namibia	22-57S	014-30E	1959-1998	49
321	804A	Tregde	Norway	58-00N	007-34E	1927-2003	94
322	800A	Andenes	Norway	69-19N	16-09E	1991-2003	99
323	805A	Vardo	Norway	70-20N	31-06E	1947-2003	60
324	360A	Wakkai	Japan	45-25N	141-41E	1967-2010	99
325	349A	Toyama	Japan	36-46N	137-13E	1967-2010	99
326	348A	Hamada	Japan	34-54N	132-04E	1984-2010	96
327	347A	Abashiri	Japan	44-01N	144-17E	1968-2010	98
328	247A	La Guaira	Venezuela	10-37N	066-56W	1985-1994	97
329	235A	Palmeira,C.Verde	Portugal	16-45N	022-59W	2000-2010	87
331	400A	Lombrum	Papua New Guinea	02-02S	147-23E	1994-2009	93
332	755A	Virginia Key,FL	USA	25-44N	080-10W	1996-2011	99
334	708A	Salvador,USCGS	Brazil	12-58S	038-31W	1955-1964	92
334	708B	Salvador-B	Brazil	12-58S	038-31W	2004-2006	96
335	231A	Takoradi-A	Ghana	04-53N	001-45W	1983-1986	100
335	231B	Takoradi-B	Ghana	04-53N	001-45W	2004-2005	100
335	231C	Takoradi-C	Ghana	04-53N	001-45W	2007-2009	77
336	283A	Fortaleza-A	Brazil	03-43S	038-29W	1955-1968	95
336	283B	Fortaleza-B	Brazil	03-43S	038-28W	1995-1998	100
337	915A	Chabahar	Iran	25-18N	060-36E	2007-2011	98
338	271A	Fort de France	France	14-35N	061-03W	1976-2007	17
339	121A	Pt. La Rue	Seychelles	04-40S	055-32E	1993-2004	98
341	826A	Stockholm	Sweden	59-20N	018-05E	1889-2007	99
342	832A	Rothera	United Kingdom	67-34S	068-08W	2002-2009	66
344	299A	Qaqortoq	Denmark	60-43N	046-02W	1991-1998	83
345	823A	Ny-Alesund	Norway	78-56N	11-57E	1976-2003	89
347	123A	Sabang	Indonesia	05-50N	95-20E	2005-2008	100
349	807A	Alexandria	Egypt	31-13N	029-55E	2009-2011	94
350	816A	Port Sonara	Cameroon	04-00S	009-08E	2008-2011	83

B ORIGINATORS

Hourly sea level heights have generously been provided to the Joint Archive for Sea Level from over 100 agencies representing over 90 countries. These agencies are shown below. Some agencies no longer exist.

All Russian Research Institute of
Hydrometeorological Information -
World Data Centre
6, Korolev Street, Obninsk
Kaluga 249020
RUSSIA

Atlantic Oceanographic and Meteor. Lab.
4301 Rickenbacker Causeway
Miami, Florida 33149
USA

BAKOSURTANAL, Indonesia
J. Raya Jakarta - Borog Km 46
P.O. Box 46 Cibinong
INDONESIA

Bangladesh Inland Water
Transport Authority (BIWTA)
Dept. of Hydrography
141-143, Motijheel C/A
Dhaka - 1000
BANGLADESH

Center for Ocean. Research and Dev.
J. Pasir Putih I. Ancol Timur
P. O. Box 580 DAK Jakarta 11001
INDONESIA

Central Weather Bureau
64 Kung Yuan, Taipei, Taiwan
REPUBLIC OF CHINA 10039

Centre National De
Recherches Oceanographiques
BP: 68 (207) Nosy Be
MADAGASCAR

Centro de Investigacion Cientifica
y de Educacion Superior de Ensenada
Av. Espinoza No. 843
APDO. Postal 2732
Ensenada, Baja California
MEXICO

Commission of Lands and Environment
PO Box 811
Zanzibar
TANZANIA

CSIRO
Division of Oceanography
GPO Box 1538
Hobart, Tasmania 7001
AUSTRALIA

Dept. of Meteorology
Male
REPUBLIC OF MALDIVES

Dept. of Survey and Mapping
Jalan Gurney
50578 Kuala Lumpur
MALAYSIA

Direccion Hidrografia y Navegacion
de la Marina
Camarra 500 Chuculto
Casilla Postal 80
Callao
PERU

Director of Meteorology CIVAIR
SEEB International Airport
P. O. Box 204
Muscat
SULTANATE OF OMAN

Directorate of Civil Aviation
P. O. Box 181
Seychelles International Airport
REPUBLIC OF SEYCHELLES

Directorate of Hydrography
Maritime Headquarters
Private Bag Retreat 7965
SOUTH AFRICA

Directoria de Hidrografia e Navegacao
Rua Barao de Jaceguai, S/N 24040
Ponta de Armacao
RJ, Niteroi
BRAZIL

Government of Barbados
Coastal Conservation Project Unit
Oistins Government Complex, Oistins
Christchurch
BARBADOS

Harbor Branch Oceanographic Institution
5600 U.S. 1 North
Fort Pierce, FL 34946
USA

Institute of Marine Sciences
University of Dar Es Salaam
P. O. Box 668
Zanzibar
TANZANIA

Institute of Oceanographic Sciences (IOS)
Bidston Observatory, Birkenhead
Merseyside L43 7RA
UNITED KINGDOM

Instituto Colombiano de Hidrologia,
Meteorologia, y Adecuacion de Tierras
Ministerio de Agricultura
Bogota, D.E.
REPUBLIC OF COLOMBIA

Instituto Cubano De Hidrografia
Seccion de Mareas
3ra. y 4. Miramar
Ciudad Habana
CUBA

Instituto Espanol de Oceanografia
C/ Corazon de Maria, No. 8 - 1
28002 Madrid
SPAIN

Instituto Geografico Nacional
Apartado 5267
Panama 5
PANAMA

Instituto Hidrografico Marinha
Rua das Trinas
49-P-1296 Lisboa Codex
Lisbon
PORTUGAL

Instituto Nacional De Hidrografia
E Navegacao
Av. Karl Marx No 153
Caixa Postal 2089
Maputo
MOZAMBIQUE

Instituto Oceanografico de la Armada
Casilla Postal 5940
Telex 3316 INOCAR-ED
Guayaquil
ECUADOR

Instituto Oceanografico de Venezuela
Universidad de Oriente
Apartado Postal 245
Cumana
VENEZUELA

Instituto Oceanografo-USP
Universidade de Sao Paulo (USP)
Cidade Universitaria, CEP 05508
Sao Paulo, SP
BRAZIL

LPAO/INPE Oceanografia
Av. Dos Astronautas 1758
Sao Jose Dos Campos, 12201
BRAZIL

Japan Meteorological Agency
1-3-4 Otemachi, Chiyoda-ku
Tokyo
JAPAN

Japan Oceanographic Data Center
5-3-1 Tukiji, Chuo-ku
Tokyo
JAPAN

Kenya Marine and Fisheries Institute
P. O. Box 81651
Mombasa
KENYA

Land Information New Zealand
Lambton House
160 Lamton Quay
Wellington, New Zealand

Lanka Hydraulic Institute, LTD.
Ministry of Public Works and Labour
Male
REPUBLIC OF MALDIVES

Marine Hydro-meteorological Center
No. 4 Dang Thai Than Street
Hanoi
VIETNAM

Meteorological Services
Vacoas, Mauritius
INDIAN OCEAN

Meteo-France
Direction Interregionale Antilles-Guyane
B.P. 645, 97262 Fort-de-France, Cedex
FRANCE

Meteological Office
PO Box 486
Betio, Tarawa
REPUBLIC OF KIRIBATI

Meteorology Station
Addu Development Authority
Gan
REPUBLIC OF MALDIVES

National Institute of Water and Atmospheric Research (NIWA)
Chistchurch
New Zealand

National Aquatic Resources Agency
Crow Island, Mattakkuliya
Colombo-15
SRI LANKA

National Ocean Service (NOS)
National Ocean. and Atmos. Admin.
SSMC4, Station 7109
1305 East-West Highway
Silver Spring, MD. 20910-3233
USA

National Tidal Centre
Bureau of Meteorology
PO Box 421
Kent Town 5071 South Australia
AUSTRALIA

Naval Hydrographic Dept.
Royal Thai Navy
Aroon-Amarin Road
Bangkok 10600
THAILAND

Naval Oceanographic Command Detachment
F. P. O. San Fransisco, CA 96885-2905
USA

NOAA/PMEL
7600 Sand Point Way NE
Seattle, WA 98115-0070
USA

Oceanographic Surveys Division
NAMRIA, Binondo Branch
P. O. Box 1620
Manila
PHILIPPINES

ORSTOM

LOP Museum
43-45 rue Cuvier
75231 Paris Cedex 05
FRANCE

Pakistan National Inst. of Oceanography
37 K. Block 6 P.E.C.H.S.
Karachi, 29
PAKISTAN

Panama Canal Commission
Engineering Division
Unit 2300
APO AA 34011-2300
PANAMA

Autoridad del Canal de Panama
Seccion de Meteorologia e Hidrologia
Division de Ingenieria
PANAMA

Port of Singapore Authority
7B Keppel Road No. 13-07/12
Tanjong Pagar Complex
Singapore 089055
SINGAPORE

PRC National Oceanographic Data Center
118, Qiwei Road, Hedong
District Tianjin
PEOPLE'S REPUBLIC OF CHINA

Proudman Oceanographic Laboratory
Bidston Observatory, Birkenhead
Merseyside L43 7RA
UNITED KINGDOM

Puertos del Estado
Departamento de Clima Maritimo
Avda. del Partenon, 10
28042 Madrid
SPAIN

Royal New Zealand Navy
Hydrographic Office
Burns Avenue
Takapuna, Auckland
NEW ZEALAND

Hong Kong Observatory
Nathan Road, Kowloon
Hong Kong
CHINA

Scripps Institute of Oceanography
University of California at San Diego

La Jolla, California
USA

Secretaria Marina
Medellin 10, IER Piso
06700 Mexico, D.F.
MEXICO

Secretaria de Marina, Armada de Mexico
Depart. de Procesamiento y Analisis Mareografico
Coyoacan, D.F.
MEXICO

SERMAR, Instituto Meteorologico Nacional
Apartado 7-3350
San Jose
COSTA RICA

Service Hydrographique Et Oceanographique
De La Marine
Etablissement Principal
B.P. 426 -29275 Brest, Cedex
FRANCE

Servicio Hidrografico y
Oceanografico de la Armada (SHOA)
Casilla 324
Valparaiso
CHILE

Servicio Mareografico Nacional
Instituto de Geofisica
Universidad Nacional Autonoma de Mexico
04510 Mexico, D. F.
MEXICO

Swedish Meteorological and Hydrographical Institute
SE-601 76 Norrkoping
Sweden

Trinidad/Tobago Hydrographic Unit
P.O. Box 1104
Port-of-Spain
TRINIDAD AND TOBAGO

University of Hawaii Indo-Pacific Network
1000 Pope Rd. MSB 317
Honolulu, Hawaii 96822
USA

Survey Directorate
Ministry of Housing, P. O. Box 5802
Manama
BAHRAIN

Weather Service Office
Majuro, MARSHALL ISLANDS 96960

Weather Service Office
PO Box 520
Koror, Palau
REPUBLIC OF BELAU 96940

Weather Service Office
PO Box 94
Yap 96943
FEDERATED STATES OF MICRONESIA

Weather Service Office
PO Box 69
Pohnpei 96941-0069
FEDERATED STATES OF MICRONESIA

Volcanological Observatory
PO Box 386
Rabaul
PAPUA NEW GUINEA

Meteorological Office
London Village
Christmas Island
REPUBLIC OF KIRIBATI

Laboratoire de Geophysique
BP 640
Papeete, Tahiti
FRENCH POLYNESIA

ORSTROM
BP A5, Noumea Cedex
NEW CALEDONIA

Tuvalu Meteorological Services
Private Mail Bag
Vaiaku, Funafuti
TUVALU

Commonwealth Ports Authority
PO Box 1055
Saipan, MP 96950
N. MARIANA ISLANDS

Institute Mechanique de Grenoble
Domaine Universitaire
B.P. No. 53X
38041 Grenoble Cedex
FRANCE

Marine Environmental Data Service
Department of Fisheries and Oceans
S12082-200 Kent St.
Ottawa, Ontario
CANADA K1A-0E6

Royal Danish Administration of
Navigation and Hydrography
Overgaden o.Vandet 62B
Postboks 1919, DK-1023
Copenhagen-K,
DENMARK

Transport Engineering Design Incorporation
278 Ton Duc Thang Street
Hanoi, VIETNAM

Marine Hydro-meteorological Center
No. 4 Dang Thai Than Street
Hanoi, VIETNAM

Instituto Nacional de Meteorologia y Hidrologia
7A Avenida 14-57 Zona 13
Guatemala, C.A., GUATEMALA

Alfred-Wegener-Institut fur Polar- und Meeres.
Postfach 120161
D-27515 Bremerhaven
Germany

Centro Nacional de Registros
Instituto Geografico Nacional
1a Calle Poniente y 43a Av. Nte. 2310
Apartado postal 247
San Salvador, El Salvador, C. A.

Iceland Hydrographic Service
Posthof 7120, 127
Reykjavik
ICELAND

Université de La Rochelle
CLDG/SONEL - Centre Littoral de Géophysique
Avenue Michel Crépeau
F-17042 LA ROCHELLE Cedex
France

Servicio de Hidrografía Naval
Avda. Montes De Oca 2124
C.P. 1271 Buenos Aires
ARGENTINA

Bundesanstatt fur Gewasserkunde
Postfach 200253
D-56068 Koblenz
Germany

Dr. James Murphy Hydraulics and Maritime Research Center
Youngline Bldg.
Pauladuff Road, University College, Cork
Ireland

Dept. of Agriculture, Fisheries, and Food
Engineering Division
Leeson Lane
Dublin 2
Ireland

Port of Djibouti
Djibouti, Republic of Djibouti

Pakistan Navy Hydrographic Department
11, Liaquat Barracks
Karachi 75530
Pakistan

Port of Aden
PO Box 1316
Tawahi
Aden, Yemen

Service d'Observation ROSAME, LEGOS/OMP
14 Ave. Edouard Belin
31400 Toulouse
France

Hydrographic Department of the National Cartographic Center
Azadi Sq., Meraj Avenue
Tehran, Republic of Iran

Ghana Survey Department
PO Box CT903
Accra, Ghana

Port Autonome de Pointe Noire
PO Box 711
Pointe Noire, Congo

Instituto Geografico Portuguese
Rua Artilharia 1, 107
1099-052 Lisboa, Portugal

Norwegian Hydrographic Services
Oceanographic Group
PO Box 60
N-4011 Stavanger
Norway

Port Autonome de Nouakchott
BP 5103
Nouakchott, Mauritania

National Institute of Oceanography and Fisheries
Quate Bay
Alexandria, Egypt

Societe National de Raffinage
BP 365
Limbe, Cameroon

Marine Institute of Ireland
Rinville, Oranmore,
Co. Galway
Ireland